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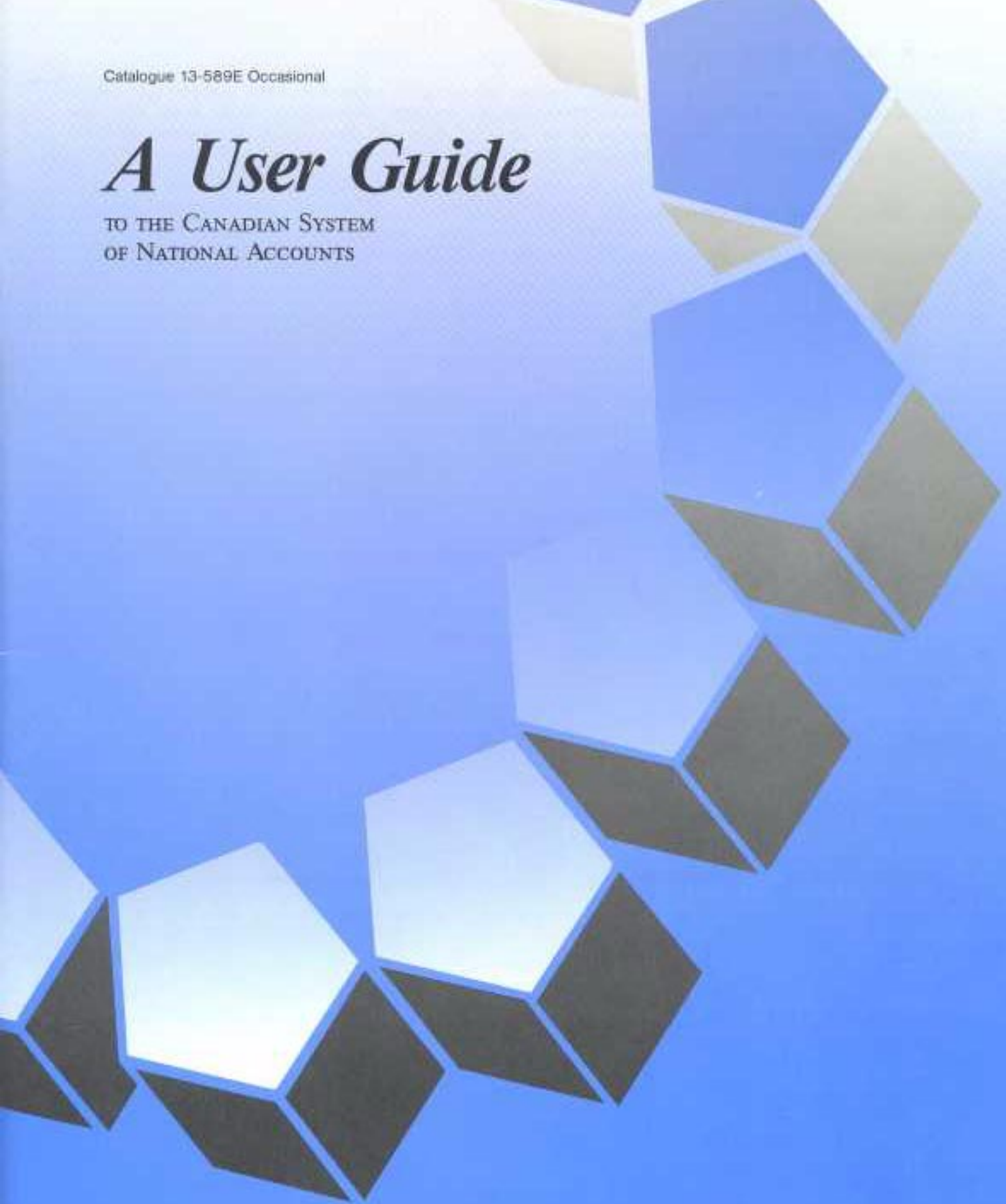
A User Guide

TO THE CANADIAN SYSTEM OF NATIONAL ACCOUNTS



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Statistics Canada
System of National Accounts Branch

A User Guide

TO THE CANADIAN SYSTEM
OF NATIONAL ACCOUNTS

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and Services Canada 1989

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Preface

This report is a further step in Statistics Canada's initiative to promote the understanding and use of key economic series published by the organization.For the first time, all components of the Canadian System of National Accounts are defined and discussed under one cover. The report covers some principal national accounting tenets and embraces input-output, income and expenditure, financial flows, national balance sheets, balance of payments and the international investment position as well as the key concepts of each component.

The report has drawn on previous documents dealing with the components individually, but greater stress has been placed on the integrated nature of the whole system and on the efforts made by Statistics Canada to ensure that conceptual integration has been translated into statistical reality.

The book is intended for use by those working in the field as a general reference guide, and for outside users as an introduction to the availability and contents of the Canadian System of National Accounts. It is hoped that it will also be of value in university macro-economic courses. For those interested in greater detail, readers should refer to reports covering the individual components of the overall system which are now, or shortly will be, available.

The report was planned and written by John D. Randall with the support and encouragement of Stewart Wells, Assistant Chief Statistician, National Accounts and Analytical Services Field and Kishori Lal, Director General, System of National Accounts. Major contributions were made by the staff of the various divisions of the System of National Accounts Branch. A special acknowledgement is due to Kishori Lal and Barbara Clift who read through the entire manuscript as it was in preparation and made many useful comments. Secretarial assistance was provided by Raymonde Purdy.

Ivan P Fellegi
Chief Statistician of Canada

The System of National Accounts

In Canada, the National Accounts have been developed since the close of the Second World War in a series of publications relating to their constituent parts. These have now reached a stage of evolution where they can be termed a “System of National Accounts”. For purposes of identification, all publications (containing tables of statistics, descriptions of conceptual frameworks and descriptions of sources and methods) which make up this System carry the term “System of National Accounts” as a general title.

The System of National Accounts in Canada consists of several parts. The annual and quarterly Income and Expenditure Accounts (included with Catalogue Nos. carrying the prefix 13) were, historically speaking, the first set of statistics to be referred to with the title “National Accounts” (National Accounts, Income and Expenditure). The Balance of International Payments data (Catalogue Nos. with prefix 67) are also part of the System of National Accounts and they, in fact, pre-date the Income and Expenditure Accounts.

Greatly expanded structural detail on industries and on goods and services is portrayed in the Input-Output Tables of the System (Catalogue Nos. with prefix 15). The Catalogue Nos. carrying the prefix 15 also provide measures of the contribution of each industry to total Gross Domestic Product at factor cost as well as Productivity Measures.

Both the Input-Output tables and the estimates of Gross Domestic Product by Industry use the establishment as the primary unit of industrial production. Measures of financial transactions are provided by the Financial Flow Accounts (Catalogue Nos. with prefix 13). Types of lenders and financial instruments are the primary detail in these statistics and the legal entity is the main unit of classification of transactors. Balance sheets of outstanding assets and liabilities are published annually.

The System of National Accounts provides an overall conceptually integrated framework in which the various parts can be considered as interrelated sub-systems. At present, direct comparisons amongst those parts which use the establishment as the basic unit and those which use the legal entity can be carried out only at highly aggregated levels of data. However, Statistics Canada is continuing research on enterprise company establishment relationships; it may eventually be feasible to reclassify the data which are on one basis (say the establishment basis) to correspond to the units employed on another (the company or the enterprise basis).

In its broad outline, the Canadian System of National Accounts bears a close relationship to the international standard as described in the United Nations publication: A System of National Accounts (Studies in Methods, Series F, No. 2 Rev. 3, Statistical Office, Department of Economic and Social Affairs, United Nations, New York, 1968).

Contents

Chapter		page
1	The Canadian System of National Accounts	7
	- introduction	7
	- outline of report	7
2	An overview of the components of the System of National Accounts	9
	- the principle components of the system	9
	- common features and concepts	10
	- interrelationship of components	14
3	Input-output	17
	- general	17
	- some basic economic aggregates in the input-output system	18
	- other features of the input-output system	26
	- uses of input-output	28
	- links and reconciliation with the income and expenditure accounts	29
4	Income and expenditure	31
	- general	31
	- extending statistical analysis of the economy	31
	- the relationship of economic to business accounting	32
	- aggregates associated with the income and expenditure accounts	33
	- definitions of the sectors	36
	- definitions of the main transaction categories	39
	- transactions specific to individual sector accounts	44
	- other features of the income and expenditure accounts	44
	- uses of the income and expenditure accounts	46
	- links and reconciliation with financial flows	47
5	Financial flows and balance sheets	
	I - Financial flows	49
	- general	49
	- extending the statistical analysis of the economy	50
	- constraints in the construction of accounts	53
	- the relationship of economic and business accounting	55
	- the sectors	55
	- classification of financial instruments	56
	- other features of the financial flow accounts	57
	- uses of the financial flow accounts	57
	- links and reconciliation with balance sheets	58
	II - Balance sheets	59
	- general	59
	- extending the statistical analysis of the economy	60
	- the relationship of economic and business accounting	61
	- valuation of assets and liabilities	62
	- sectors and assets and liabilities categories	65
	- other features of the national balance sheet accounts	67
	- uses of the national balance sheet accounts	68
	- links and reconciliation with the international investment position	68

6 Balance of payments and international investment position
I - Balance of payments 71
- general 71
- extending the statistical analysis of the economy 73
- other features of the balance of payments accounts 80
- uses of the balance of payments accounts 81
- links and reconciliation with other branches of the accounts 81

II - International investment position 83
- general 83
- extending the statistical analysis of the economy 84
- other features 86
- uses of the international investment position 87
- links and reconciliation with other branches of the accounts 88

7 Controversy, convention and creativity in the accounts 89
- introduction 89
- classic issues 94
- possible extensions and modifications to the system 96
- more recent concerns about the accounts 98
- the future

Appendix - Current publications in the Canadian System of National Accounts 101

Index 103

Chapter 1

The Canadian System of National Accounts

Introduction

This publication is a guide to the various components of the Canadian System of National Accounts, describing frameworks, major concepts, definitions and the purpose of each component. It draws attention to accepted national accounting conventions and to the links that exist between the components of the system and explains how each provides a statement about an important aspect of the Canadian economy. The central theme carried by the report is the integrated nature of the overall system, not only conceptually but also statistically.

Users and apprentice producers of national accounts will find the report useful, as will students of economics. Meeting the needs of a variety of readers poses the challenge of choosing the right balance between those seeking an abstract or conceptual discussion of the accounts and those seeking to know more about the 'nuts and bolts' of putting together the statistical estimates. Hopefully the report maintains its balance on this tightrope. The objectives of Statistics Canada will have been well served if the publication promotes discussion and a better understanding of the accounts, and ultimately, results in improvements in the data and analysis of published figures.

The fact that the report was commissioned underlines the importance Statistics Canada attaches to the need for adequate documentation of statistical series. Present computer technology has vividly reinforced the knowledge that descriptions are essential, not only for understanding what has been done in the past, but for maintaining continuity and improving what is presently being done. The recurring theme of the integrated nature of the system of accounts is a reflection of the high priority attached by Statistics Canada to improving the statistical linkage between the system's components.

The volume is an intended forerunner in a series of reports planned by Statistics Canada in the field of national accounting. As already noted, it provides an overview of the entire Canadian System of National Accounts - a sort of umbrella report describing the framework, general concepts, component links and uses of the accounts. Subsequently it is intended to publish separate reports on major individual components. These will emphasize the detail underlying the sources of data used and methodology employed in compiling the accounts. To the extent that this report embraces the whole Canadian System of National Accounts it is a departure from its predecessors, although it draws on descriptive material contained in those earlier reports which dealt with individual components of the system.

Descriptions of the accounts are based on current practices and no attempt is made to trace the historical pattern of development of each of the components. In the sections dealing with frameworks and concepts there is little that is new, there having been no major changes introduced in the past decade. This reflects a certain coming of age of the accounts, plus the fact that the structure and underlying concepts of the System of National Accounts are only now being systematically reviewed at the international level after a lapse of almost twenty years since the last major report. Although at present it appears unlikely that major changes will be recommended, any proposals for change by the United Nations Statistical Office will be considered at the time of the next comprehensive revision of the Canadian national accounts.

Within the overall system, the basic production accounts spearheaded the statistical development of the abstract model. However, in recent years more emphasis has been evident in the development of the financial dimensions of the model. The potential of the financial components has yet to be realised, particularly in respect of national balance sheets. However, with many of the major economic problems now confronting the world centred on financial issues, interest in the financial accounts may be expected to increase.

Outline of report

The remaining paragraphs describe the contents of the report. Chapter 2 provides an overview of the entire System of National Accounts, including some recurring key concepts. The review provides a thumbnail sketch of each component and explains briefly what the component measures and illustrates, with reference to a schematic presentation, how it fits into a comprehensive and cohesive whole. Some picture of the integrated nature of the Canadian economy should emerge from this chapter.

Chapters 3 to 6 have similar formats, each chapter dealing with a major component of the system. They follow in what might be regarded as a logical sequence, commencing with the input-output tables and its two important derivatives, real domestic product by industry and productivity measures (chapter 3). Subsequent chapters cover the income and expenditure accounts (chapter 4), financial flow accounts and national balance sheets (chapter 5), balance of payments and international investment position statements (chapter 6).

Each chapter discusses the framework and concepts around which the component is built and defines the major statistical series, the transactors and transactions found in the system. For those branches of the system following input-output, an explanation of how they extend statistical analysis of the economy beyond the measurement of production is given. For components whose ancestry included business accounts there is a brief discussion of the relationship between business and economic accounting. Special features which go beyond the primary measures of each system are also reviewed,

as are the more important uses of each component. The concluding section of each chapter describes links with other systems and outlines the reconciliation items required to move to the next component in the system. In most cases the links follow a logical pattern, with major aggregates feeding from one component to the next.

The final chapter takes a look at some of the continuing statistical and conceptual problems faced by national accountants and at the relevancy of some of the existing measures in the light of social, economic and institutional changes that have emerged over the past decade. It stresses the importance of adequately reflecting these changes in the accounts if they are to retain the confidence of users.

For example, it reviews some of the controversy surrounding the drawing of the boundary of production including the issue of including unpaid work done in the household. It discusses some possible extensions and modifications to the system such as the inclusion of capital gains and losses and the treatment of outlays on consumer durables as investment rather than consumption. It looks briefly at the statistical problems posed by illegal activities and respondents' attempts to conceal legal activities for tax purposes. The issues raised in the concluding chapter fall into two categories, the controversial long-standing 'hardy perennials', and those that have recently developed with the evolution of the economy.

Chapter 2

An Overview of the Components of the System of National Accounts

The principal components of the system

Four major bodies of statistical data constitute the principal components of the national accounts. With the recent publication of the national balance sheets, the Canadian system now has all components in place. Their development has occurred over many decades, depending on the pace of progress in the theoretical field of national accounting, the demands from policy makers and analysts, and the degree of sophistication in the statistical collection system. Although the system is formally in place and statistical links have been forged, there is still much to be learned before a full understanding of the economy is reached, particularly regarding the relationship between production and financial transactions.

The four components, devoted to different aspects of the Canadian economy, are the input-output tables and their major derivatives, industry real output and productivity; the income and expenditure accounts; the financial flow statements and national balance sheets; and the balance of payments and international investment position.

a) Input-output tables

Input-output tables measure productive activity occurring in the economy, focussing particularly on commodity transactions of industries and the role of producers and purchasers in the economy. Tables show the total output of commodities by industry and the use of commodities by industries; in addition, the system provides a measure of value added by industry, the flow of commodities to final demand sectors and the cost of primary inputs to industries - the three alternative ways of measuring gross domestic product. Both current price and constant price series are available. Input-output tables are also an important ingredient in producing Canadian productivity estimates; the constant price domestic industry outputs are divided by labour inputs. Provincial input-output data are available on an occasional basis.

b) Income and expenditure accounts

Income and expenditure accounts, as the name suggests, focus on income generated by productive activity and final expenditure on that production. The main tables are designed to show the principal components of final demand and the main types of income arising from production; in that respect they yield the same gross domestic product aggregate as may be found in parts of the input-output tables. The accounts however, disaggregate the main tables into four major institutional sectors of the economy, (persons and unincorporated business, government, corporate and government business enterprises, and non-residents), providing estimates of current income and expenditure and capital accumulation for each sector.

These estimates record not only income arising from production but also show the redistribution of income which takes place through intersectoral transfer payments and receipts. The capital finance accounts which measure saving and non-financial investment yield, as a balancing item, the lending capacity or borrowing requirements of the sector. Supplementary data covering geographical distributions, selected components of the system distributed industrially, and constant price estimates form part of the Canadian accounts.

c) Financial flow and national balance sheet accounts

The financial flow accounts reveal the financing of economic activity by focussing on transactions in assets and liabilities for a number of institutional sectors. The transactions are classified by type of financial instrument. The system basically shows the way in which funds move from those sectors with saving in excess of their capital spending programmes to those whose capital programmes exceed their saving (the lending and borrowing sectors). The sectoral disaggregation places particular emphasis on financial intermediaries such as banks, near-banks, insurance companies and other financial institutions because of their importance in the process of matching the needs of borrowers and lenders. In addition, the system reflects portfolio adjustments occurring through trading in outstanding financial instruments and other credit market activities. Saving, non-financial investment, lending and borrowing estimates flow into this system from the capital finance accounts of the income and expenditure component of the system.

The national balance sheet accounts are structured in the same way as the financial flows but are intended to show the level rather than change in assets and liabilities; institutional sectors and item classifications are matching. The amount by which a sector's total assets exceeds its liabilities provides an estimate of its net worth. At the aggregate level the national balance sheet provides an estimate of net national wealth by summing the net worth of each domestic sector. The main table also provides an alternative derivation of net national wealth. In an economy with no international transactions financial assets and liabilities are equal, being opposite sides of the same coin, and national wealth is equal to its stock of non-financial capital assets; because of international connections Canada's stock of non-financial capital must be adjusted by net claims of non-residents in deriving net national wealth. The difference in year-to-year national balance sheet levels reflects not only the changes recorded in the financial flow accounts

but re-evaluation due to price fluctuations and unforeseen events, as well as conceptual, structural and classification changes.

d) Balance of payments and international investment position

Balance of payments accounts are devoted entirely to the economy's transactions with non-residents or the rest of the world. The basic statement is divided into two accounts, one covering current and the other capital transactions. The current account records payments and receipts for goods and services traded, investment income flows and transfer payments; the capital account covers transactions in financial assets and liabilities recording the inflows and outflows of capital. The two accounts are always conceptually in balance, any excess of receipts on current account being offset by the net acquisition of financial assets or net reduction in liabilities and vice versa. In condensed form, the balance of payments estimates appear in other components of the System of National Accounts as the non-resident sector, the current account being part of the income and expenditure system and the capital account being reflected in the financial flow accounts. Components of the current account of the balance of payments appear in an expanded form in the input-output system where detailed figures of trade in goods and services are presented on a commodity basis.

The international investment position measures the claims of residents of the nation on non-residents and the nation's liabilities to non-residents. In effect, the system is a special purpose balance sheet for the residents of the country in which are recorded assets and liabilities resulting from all previous dealings with the rest of the world. Insofar as flow transactions constantly affect the level of assets and liabilities, the international investment position bears the same relationship to the capital account of the balance of payments as the national balance sheet bears to the financial flows. The international investment position estimates, in condensed form, are embodied in the national balance sheets and become the rest of the world sector. However, in making this transition the balance sheet is recorded as if seen through the eyes of non-residents, hence assets and liabilities are reversed.

Common features and concepts

In writing about the framework, concepts and definitions of the system of national accounts it is difficult to convey the vitality of the system. The end result tends to be a rather dusty account of what appear to be a series of unrelated esoteric statistical exercises. To overcome this, it is essential that the reader retain an image of the system as a series of connected living pictures of the workings of the economy, illustrating the nation and its residents going about their business.

The system portrays the 'what we do' and 'how we do it', and the 'where we are' and 'where we've been' of economic transactions; in so doing, it unlocks the door to understanding much about the economic standards and lifestyles of the country's population. It creates for the country as a whole a set of accounts not unlike those maintained by a business or a budget-conscious individual, and in this respect it comes to life in a personal way.

Two key concepts dominate in the system of accounts. In the case of the input-output and income and expenditure components it is production, where as in the financial flow and balance sheet accounts it is financing and wealth accumulation. The balance of payments and international investment position accounts straddle both concepts, the balance of payments current account falling into the production sphere and the capital account and international investment position into the financial sphere.

Each component is structured to reveal the principal transactors and their main transactions or activities. Transactors are grouped either on the basis of behaviour and/or motivation, or on the type of service or good that they provide, while the transactions reflect commodities produced and sold, consumption and investment activities, incomes generated and the flows and levels of financial claims.

The next few sections are devoted to terms and concepts that occur frequently and are central to the system, including the concept of economic production, gross and net measures, definitions of national and domestic and market prices and factor costs. Clearly an understanding of these terms is necessary to interpret the most central measure of the system, gross domestic product at market prices. The main sectors and principal transactions are also briefly noted in this introductory chapter - detailed definitions are included in the chapters dealing with individual components of the system.

a) Production

The term production, or economic activity, is at the very heart of the System of National Accounts. The accepted definition in the Canadian accounts takes a middle-of-the-road approach between those who, for example, would like to see the definition broadened to include a value for unpaid household services and those who prefer a narrower concept which would exclude imputed items that do not pass through the money exchange market Some of the controversial issues concerning an extension or contraction of the generally accepted boundaries of production are outlined in the final chapter.

The presently accepted definition of production in the national accounts is largely made up of goods and services produced and exchanged for money. This broad definition includes not only the output of physical goods but the value of the activities of service industries such as transportation, retail trade, institutions and government. This core concept is also referred to as the market or money-exchange economy. It is more frequently used in the context of production of final unduplicated output but it may also refer to the broader measure of gross supply of commodities in which intermediate-use commodities are also counted.

There are, however, two important exceptions to the money-exchange core concept, one which contracts and the other which extends the boundary.

Although falling within the accepted conceptual boundary of production, illegal activities are, by convention, not included in the Canadian accounts because of the difficulty of arriving at accurate statistical estimates. In view of a palpable increase in drug trafficking, this omitted portion of production may have become relatively more important than in former years.

Illegal activity must be distinguished from the small part of the legal money-exchange economy that has gone 'underground' in an attempt to evade taxes. The term includes such activities as working "off-the-books", moonlighting and bartering. Although the subject has generated a lot of discussion, the estimation methods used in Canada limit the risks of missing production. Because of the methodology which includes built-in allowances, unreported legal activity is not thought to seriously affect the level of the estimates.

The major expansion of the production measure beyond the 'money-exchange' economy occurs in the case of non-market activities which parallel market activities, and for which there automatically exists a satisfactory basis of valuation. In such instances the non-market activity is considered productive and the production boundary extended.

The principal example of a value being placed on a non-market activity is in the case of the occupation of a dwelling by the owner; in this situation there is no payment for the rental of the dwelling, but there is a value in the services provided equivalent to the net income that could be derived from renting the property commercially. A figure based on this valuation is imputed and included in the production measure. The argument for including this imputation is that the value of the shelter is the same regardless of the type of occupant and the imputation renders the production measure invariant to shifts in the ratio of tenant-to owner-occupied dwellings.

Other imputations are made covering the value of farm products consumed directly in farm households, food provided to employees in lieu of wages, and other income-in-kind such as lodging provided to hotel, camp workers and domestic servants. Values are also imputed for the services of government fixed assets owned and used, equivalent to the value of capital consumed; unlike business, government accounting records make no charge against production for the consumption of capital. Finally, a value is imputed for the services rendered by banks and other financial institutions for which they make no explicit charge; the assumptions and methodology underlying this particular imputation are described in the following chapter.

b) Gross and net

Production may be expressed on a gross or net basis depending upon whether it is measured before or after allowance for capital consumption. These allowances are charges against production that cover depreciation or the using-up of fixed capital in the process of production. Net production recognizes the fact that part of current output is simply required to replace depreciating fixed durable goods.

The reader may more frequently encounter the gross than the net measure of production simply because the expenditure based measure does not lend itself to the deduction of capital cost allowances. It has also been argued that the gross measure is more useful for some analysis because the replacement of capital can be deferred, and therefore in the short run it is gross production that is available for final consumption. The continued consumption of gross production, however, would gradually erode the wealth of the country.

Gross domestic production is itself a net concept to the extent that it covers only final output and is not equal to the total value of commodities produced and recorded in the input-output 'make matrix'; the latter estimate includes the production of both intermediate and final commodities.

c) National and domestic

The terms national and domestic appear throughout the system and qualify many of the aggregate measures. The national concept relates to activities of residents of a country and the domestic concept to activities occurring within the geographical boundaries of a country.

National income and product relate to residents' earnings attributable to activity both in Canada and outside, and exclude the earnings of non-residents from their activities in Canada. In the Canadian accounts the adjustment to move from domestic to national aggregates is confined to investment income, with interest and dividends due to Canadian residents from their foreign investments being added and those earned in Canada by non-residents being deducted. The earnings of other factors should be taken into account, such as wages earned on one side of the border by someone residing on the other, but they are omitted because they are both small and counter balancing.

Domestic production refers to production occurring within the geographical boundaries of Canada. It is largely attributable to persons, enterprises and institutions regarded as Canadian residents but a relatively small part is due to non-residents, such as the return to capital invested in Canada by non-residents and the income of non-residents working in Canada but residing in the United States. Earnings of Canadian residents from their productive activities abroad is excluded from domestic production. Residency becomes irrelevant in the domestic concept where the overriding factor is geographical boundary; all production is included if it occurred in Canada.

Determining residency for purposes of deriving national statistics does not present problems except in those limited situations where there is frequent trans-border crossing such as occurs with mobile equipment. Normally any person residing in the country for more than a year is considered a resident. Government employees, no matter where they reside, are regarded as residents of their home country. Businesses are residents of the country in which they carry on productive activity regardless of the residency of their owners; the residency of owners becomes important only when factor payments are distributed by the business. In the case of agents in Canada operating on behalf of principals in the United States, the transaction undertaken on behalf of the principal is regarded as a transaction with a non-resident, but the service provided by the agent is considered to be that of a resident. The concept of residency is critical in the balance of payments accounts and further discussion is deferred until that chapter.

d) Market price and factor cost

Two levels of valuation are frequently referred to in the production accounts, market price and factor cost. The two concepts are designed to meet different needs and can be linked through the addition or subtraction of net indirect taxes. The 'net' in this instance indicates that subsidies have been subtracted from the indirect tax total. Market price valuation is more appropriately applied to final demand analysis where the concern is with prices which the purchaser actually pays. The factor cost valuation is more appropriate for analysis where the concern is with resources embodied in different commodities or resource allocation.

Market prices include that broad spectrum of taxes levied on expenditure and generally referred to as indirect taxes. The basic distinction between direct and indirect taxes in national accounting is whether the tax is levied on income received by a factor of production or whether it is considered a cost. The sort of indirect taxes embodied in the market price valuation are sales, property and excise taxes, and customs duties.

Factor cost valuation represents the sum of incomes of factors of production as measured by the cost of labour and capital inputs in the production process. Direct taxes levied on incomes are a part of the factor cost valuation as incomes are measured before tax deductions. The factor cost measure reflects earnings before transfers have had a redistributive effect. In economic terms the factor cost concept is regarded as most useful for the analysis of production and relative primary resource allocation between industries or embodied in commodities.

Although indirect taxes are a cost to producers and are included in market prices, they do not form part of the income of factors of production, or factor costs. In an accounting sense, as indirect taxes raise market prices above factor costs, subsidies tend to reduce the difference and can be thought of as negative taxes. In essence, subsidies help defray factor costs and other charges against production, so that the market prices are not as high as they might otherwise have been. The market price concept is regarded as more appropriate for welfare comparisons on the basis of the equality of relative marginal utilities and relative prices.

Paradoxically, direct taxes may affect market prices indirectly while indirect taxes may affect them directly. However, the two way classification of taxes used in national accounting is not based on the incidence of the tax because insufficient evidence exists to determine who bears the ultimate burden; rather, the national accounts classification is in general based on a distinction between taxes levied on income and wealth and those levied on expenditure.

e) Transactors

One of the most common threads running through the system of accounts is the grouping of participants in the economy into four sectors, each of which contains units having broadly similar motivations and patterns of behaviour. These are known as the institutional sectors and represent persons and unincorporated business, government, corporate and government business enterprises, and non-residents. Each component of the system with the exception of the balance of payments and international investment position, which represent only the non-resident sector, classify transactors according to these four main sectors.

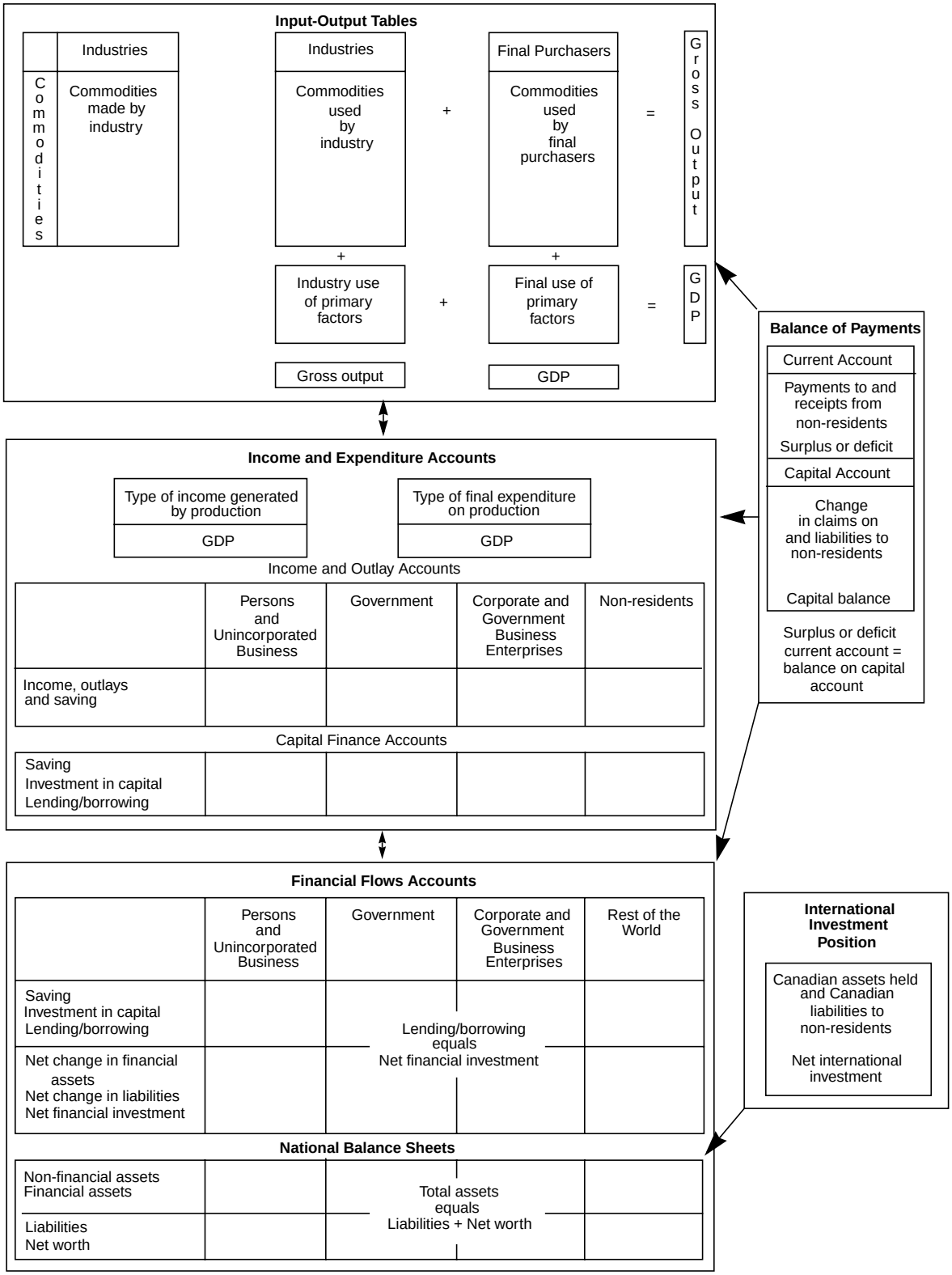
The emphasis attached to the institutional sectors varies by component of the accounts. In the input-output system they play a secondary role to industrial classifications, while in the financial components they form the basis against which the sectoring is expanded to display the role of financial businesses. The four institutional sectors reign supreme in the income and expenditure where they are the central focus of the system.

The sectors play a vital role in the integration of the System of National Accounts; without such a common thread the ability to link the components would be severely impaired.

f) Transactions

To bring order to the myriad activities of the sectors, their transactions are structured around a number of different classification schemes. Transactions in the production components display type of commodity made and used and the main types of demand and income generated by production. The financial systems present transactions in financial instruments classified according to the issuer, the liquidity or the currency of the instrument. The classification of international transactions is unique and focusses on groupings important for the analysis of balance of payments and international investment - at a highly aggregated level there is a common meeting point with the other parts of the system of accounts where international transactions are grouped into four

CHART 1 - A Schematic of the Canadian System of National Accounts



categories, goods, services, investment income and transfers.

Interrelationship of components

Before a more detailed description of each component, readers may wish to refer to the schematic presentation of the national accounts outlined in Chart 1 on page 13. For those who are familiar with the accounts the chart will present no difficulty, but for those encountering national accounts for the first time, it is recommended that they defer study of the diagram until they have read the more detailed description of components of the Canadian system of national accounts.

The chart presents each of the branches as a major block with a series of arrows indicating the links between the blocks. For example, the linking lines with arrow heads at both ends indicate the equivalence of measures of final demand and factor cost estimates in the input-output system and the income and expenditure accounts, and between the capital finance accounts of the income and expenditure system and the financial flows transactions. The positioning of three of the blocks in vertical juxtaposition indicates that there is a logical flow between production, income, consumption, saving, financing and wealth accumulation. The positioning of the balance of payments and international investment accounts in a horizontal relationship indicates that these systems feed into the others as component parts.

Within each of the major blocks, a simplified example of the principal tables or matrices to be found in each component of the national accounts is given. Readers familiar with the Canadian system will have no difficulty in recognizing them, even though the statistical presentation of the Canadian input-output system differs slightly in design from the diagram.

Although not shown in the chart, the input-output and income and expenditure systems contain tables devoted to the presentation of data in constant or fixed prices. Major parts of the input-output system are reproduced in constant prices whereas in the income and expenditure accounts only the final demand table is presented in fixed prices. Other systems, because of conceptual and practical considerations, contain no constant price estimates.

Also not shown in the chart is a gross domestic product by industry table, a formal sub-component of the input-output tables. Given the industry orientation of the system these estimates are a logical derivative of the input-output framework and result from subtracting the value of commodities used by an industry from those it makes. Aggregative productivity measures are also largely a derivative of the input-output system in Canada.

The chart reveals the emphasis given to the institutional sector disaggregation in the income and expenditure accounts, the financial flow transactions and the national balance sheets. Although only the four main institutional sectors are represented in the chart, in those components of the system devoted to financial data there is a considerable expansion of the corporate and government business enterprises sector with regard to financial institutions.

In the above, the economy has been characterized as performing a number of functions which may be examined independently; they are in fact closely linked. The examination and analysis of components separately is less revealing than when they are considered jointly. For example, more may be understood about the demand for goods and services when financial market developments are taken into account; equally, more may be understood about financial markets when the various forms in which wealth is held are taken into account.

The links between components have important ramifications for the statistical collection system. If different concepts, classifications or definitions are used in compiling the various components the process of using them jointly is severely hampered and the credibility of the measures suffers. When two divergent estimates purporting to measure the same economic phenomenon are produced it introduces uncertainty at best, and confusion at worst, into any assessment of the economy.

Within a single component of the system, it has always been recognized that consistency is of overriding importance if the estimates are to be of optimum value to users. Discrepancies due to statistical gaps and weaknesses will occur when measures of the same phenomenon result from different approaches, as in the case of measuring production via incomes generated or final expenditure. However, for any single series there will be only one definition, concept and methodology, so that, for example, there is only one estimate of consumer expenditure or business investment in the income and expenditure accounts.

Consistency across the entire system is difficult to achieve for a number of reasons. In the first place, the range and availability of source material varies greatly over the different time periods during which components are developed. Secondly, changing technology has an enormous impact on the methodologies feasible at different times. Finally, the introduction of revisions to standard classification systems frequently presents operational problems.

Most users and all producers of national accounts are well aware of the above problems. They have been emphasized, however, because at the time of the recent comprehensive revision, considerable effort went into eliminating major inconsistencies which existed between components of the Canadian System of National Accounts. Many final demand and income aggregates common to both the input-output and the income and expenditure estimates formerly differed because of source data, methodology or classification variations. Now these differences have been eliminated so that both components use the same estimates. Other differences between the component systems have also largely been eliminated.

Many economic series are common to more than one component of the System of National Accounts but in the following chapters, common concepts, definitions and classifications are described in detail under only one of the systems. Because of the degree of dependency of

the input-output and income and expenditure accounts on shared concepts and statistical series it is necessary to read both chapters in order to encounter descriptions of all concepts and definitions common to both systems. The same is true for the financial flow and balance sheet accounts.

For example, the three methods of measuring gross domestic product described in the chapter on input-output also apply in large measure to the income and expenditure accounts, while the final demand and income components of gross domestic product common to both systems, such as wages and salaries, net income of unincorporated business, personal and government expenditure are defined in the income and expenditure chapter. The sectors and transactions common to the financial flow and balance sheet accounts are defined only in the description of the financial flows.

The more detailed descriptions of the components of the system which follow, provide information on the availability of data, a summary of the underlying concepts and structural framework and the integrated nature of the entire system. Each chapter presents a highly condensed version of the main table(s) of each system, using data for 1981 in order to illustrate the degree of statistical integration that exists.

The sequence chosen for describing the entire system of accounts reflects a logical progression of economic events from production through to wealth accumulation, rather than a chronological sequence of the development of the Canadian System of National Accounts or an order of importance.

The descriptions provided are in no way intended to replace the full documentation contained in publications specific to particular components of the national accounts. This publication is intended to serve as a convenient reference in which all branches of the national accounts are summarised in one publication and to illustrate the integrated nature of the Canadian System of National Accounts.

Chapter 3

Input-Output

General

The first input-output tables published by Statistics Canada were for the year 1949 and differed in concept and coverage from the present tables. Input-output tables in the present format were first published in Canada in 1969 and covered the year 1961; the two volumes published at that time contained a description of the detailed accounting framework, classification systems and definitions as well as the mathematical treatment of analytic uses. Subsequently, tables covering 1961 to 1974 were published and these were followed with revisions and updates. Annual current and constant price tables are now available for the entire period 1961 to 1981 and may be found in "The Input-Output Structure of the Canadian Economy", Statistics Canada Catalogue15-510 and 15-511. Data for the years since 1981 are published in "The Input-Output Structure of the Canadian Economy", Statistics Canada Catalogue15-201 and 15-202.

The input-output component was selected to introduce the description of the Canadian System of National Accounts because it represents the first link in a chain of economic activities - the activity of production. The system describes production in Canada in a statistically detailed and deconsolidated presentation, measuring production in a number of different ways but focussing particularly on industry and commodity relationships.

Some measures of production which feature in the input-output system, such as gross domestic product, reappear in the income and expenditure accounts but are examined from a different vantage point. The basic production concepts have already been described and the three methods of measuring gross domestic product are described in the context of the input-output framework and are not repeated when encountered again in other parts of the system.

The framework of the Canadian input-output system consists of three basic tables: gross output of commodities (goods and services) by producing industries; industry use of commodities and primary inputs (the factors of production, labour and capital, plus other charges against production such as net indirect taxes); and final consumption and investment plus any direct purchases of primary inputs by final demand sectors.

The statistical presentation of the Canadian system differs from the traditional conceptual framework which is frequently presented in a single matrix divided into four quadrants, one showing the inter industry flow of commodities produced and consumed in the production process, the second the final demand use of outputs, the third the industrial use of primary inputs and the fourth the final demand sectors' use of primary inputs.

The schematic of the input-output system on page 13 combines features of both the Canadian system and the more traditional single matrix presentation.

Table 1 on page 19 and 20 shows the Canadian input-output figures for the year 1981structured according to Canadian practice, while Table 2 on page 21 shows the same estimates in the four quadrant matrix format more familiar to some readers.

Parts (a) and (b) of Table 1 are the heart of input-output, recording the production of commodities by industries, referred to as the 'make' matrix, and the use of commodities by industry, referred to as the 'use' matrix. These provide a picture of the industrial structure of the country and permit an assessment of the interdependency of industries or commodities. They render a detailed account of the commodities produced by industry and of commodities purchased by industry or final demand sector.

This is the unique contribution of input-output to national accounting. The measures may be used to tie together commodity sales by industry with industry purchases of those commodities to reveal the extent to which industries are interdependent; to expose the extent to which an industry is primarily serving intermediate or final demand; and to illustrate the degree of industrial development of the country. Commodities used by industry for further processing are referred to as intermediate inputs.

Part (c) of Table 1 is the final demand matrix and records commodities produced not as intermediate inputs, but to satisfy final consumption or investment demands, plus primary inputs purchased or paid for by final demand sectors. This measure focusses on the ultimate purpose of all economic productive activity. The rows represent values of commodities used in consumption or investment, and the columns show the combination of commodities meeting particular types of final demand or investment activity.

The categories into which final demand and investment activity are fitted are the broad traditional groupings common to both input-output and income and expenditure accounts: personal expenditure, government expenditure, fixed capital investment, inventory change and exports. In order to yield a figure of expenditure on Canadian production, a commodity import column appears in the table which is deducted from the total; this allows for the fact that the final demand and investment categories all embody elements of imported commodities.

Used in conjunction, the three parts yield important economic aggregates: the total supply of commodities, the total use of commodities subdivided between industry (intermediate inputs) and final demand sectors, and an expenditure and an income based estimate of gross

domestic product. The sum of commodities consumed or invested by final demand sectors plus their direct purchases of primary inputs yields the expenditure based estimate of gross domestic product, while the sum of primary inputs purchased or paid for by industry or final demand sectors yields the income based measure of gross domestic product.

Given the equality of the gross supply and disposition of commodities and that interindustry intermediate purchases and sales of commodities are identical, it follows that final demand is equal to the cost of primary inputs. The former is derived by subtracting intermediate inputs from total use of commodities and the latter by deducting intermediate inputs from total supply of commodities. Essentially, what this says is that the measure of gross domestic product derived by summing expenditure on final output is identical to that derived by adding incomes generated by production plus other charges such as depreciation.

A further perspective to the production process is provided by the input-output tables. In this case, the value added by individual industries in the production process yields a third method by which gross domestic product may be estimated. The value added approach yields identical results to the final expenditure and income generated methods.

The industry value added series arrived at by deducting intermediate industry purchases from industry commodity outputs is a derivative of the basic input-output matrix system. The method has a distinct advantage over the others in that it is the most widely accepted one capable of expressing the industrial origin of gross domestic product in 'real' terms, that is, after the removal of the influence of price change. The technique for doing this is explained later in this chapter in the section on constant price input-output measures.

In the Canadian system, estimates of gross domestic product by industry, based on the value added approach, were once considered an independent component because historically they preceded the development of the input-output tables. Nevertheless, the basic data required to calculate value added are generated by the input-output system, and today the industry output estimates are a sub-system of input-output. The two systems continue independently when the period of account is less than a year, and for the latest years when input-output tables are not yet available. For the more current years and for intra-annual estimates different data sources and methods have had to be developed.

Another measure, heavily dependent on the input-output system but sometimes regarded as an independent component of the Canadian System of National Accounts is the aggregate productivity estimate. The conceptual frame around which indexes of productivity are constructed include a numerator measuring industrial contribution to gross domestic product at factor cost in constant prices, and a denominator covering the labour input associated and precisely matched with the industry output contained in the numerator. The industry output estimates are derived from the input-output system.

Ideally, all inputs into the production process should be part of the productivity calculation so that a true measure of the efficiency with which inputs are being combined would result. The present method calculates changes in output per unit of labour, but because of conceptual and technical difficulties, changes due to other inputs are not isolated and separately identified. In view of this, productivity changes resulting from the use of the present methodology cannot be ascribed to any single, or any combination of resource inputs. Changes should not be solely attributed to the contribution of labour even though productivity change is stated in terms of units of labour employed.

In the context of the Canadian System of National Accounts, productivity aggregates are considered as a derived sub-system of input-output, given the prominent role played by the industry output measures in their calculation.

Both the gross domestic product by industry and productivity sub-systems require estimates of output in real terms, that is, after the removal of the effect of price change. The constant price estimates from the input-output tables are the bases for both industry real output and productivity measures.

Some basic economic aggregates in the input-output system

a) Industry intermediate inputs

The measurement of industry intermediate inputs is central to the input-output system. One of the key input-output tables focusses on those commodities used by industries (excluding capital goods) for the purpose of producing other goods and services. For example, these are the metal, glass, plastic and rubber components that make up the finished automobile. Such commodities are referred to as intermediate inputs. At its most detailed level the matrix cross-classifies close to 600 commodities used by over 200 industries. It is not published at this fine level of detail but is available upon request, subject to meeting Statistics Canada confidentiality standards.

b) Gross domestic product

Gross domestic product (GDP) is an important aggregate common to both the input-output and income and expenditure accounts. In very general terms it is the money value of goods and services produced within the geographical boundaries of Canada available for final domestic consumption, export or investment.

As noted earlier, there are three methods of measuring domestic production referred to as the final expenditure approach, the income approach and the value added by industry approach. The first method measures expenditure on goods and services by final users: consumers, government, business on capital account and net expenditure by non-residents. The income approach measures the labour and capital costs of producing goods and services plus other charges against production. The final approach measures the value added by industries in the production process by subtracting their intermediate input costs from the value of their total output.

TABLE 1A. Canadian Input-Output Tables - 1981
Make (Output) Matrix - Producer Prices

Billions of dollars

	Industries								
	Agriculture Fishing Forestry	Mining and Quarrying	Manu-facturing	Construction	Utilities	Margins	Trade Services	Other[1]	Total
Commodities									
Agriculture Fishing Forestry	27.8	-	0.1	-	-	-	-	-	27.9
Mining and Quarrying	-	29.7	1.4	-	-	-	-	-	31.1
Manufacturing	1.1	2.6	194.5	-	0.9	1.4	-	-	200.5
Construction	-	-	-	59.9	-	-	-	-	59.9
Utilities	-	-	0.1	-	49.2	-	-	-	49.3
Trade Margins	-	-	4.1	-	0.2	43.3	0.7	-	48.3
Services	0.1	0.3	1.2	0.4	0.8	6.7	113.7	-	123.2
Other[1]	-	-	-	-	-	-	-	38.5	38.5
Total	**29.0**	**32.6**	**201.4**	**60.3**	**51.1**	**51.4**	**114.4**	**38.5**	**578.7**

TABLE 1B. Canadian Input-Output Tables - 1981
Use (Input) Matrix - Producer Prices

Billions of dollars

	Industries								
	Agriculture Fishing Forestry	Mining and Quarrying	Manu-facturing	Construction	Utilities	Trade Margins	Services	Other[1]	Total
Commodities									
Agriculture Fishing Forestry	5.4	-	14.8	0.1	-	0.5	0.3	0.1	21.2
Mining Quarrying	0.1	1.2	23.8	3.2	1.2	-	0.2	-	29.7
Manufacturing	5.8	2.2	69.2	18.6	5.2	2.7	4.7	13.9	122.3
Construction	0.3	0.7	0.8	-	1.4	0.2	2.7	-	6.1
Utilities	1.0	0.9	4.9	0.5	4.9	2.7	3.5	14.7	33.1
Trade Margins	0.7	0.5	4.4	2.9	0.6	0.5	0.6	2.8	13.0
Services	1.6	7.3	7.7	5.3	3.5	5.0	12.4	3.8	46.6
Other[11.2]	1.6	12.2	1.7	2.0	3.6	4.9	1.5	28.7	
Primary Inputs									
Labour Income	3.0	5.0	42.7	18.0	18.2	25.8	33.1	-	145.8
Net income, unincor-porated business	4.2	-	0.1	1.5	0.5	1.6	9.8	-	17.7
Operating surplus	6.0	12.4	18.7	5.6	13.4	7.6	34.2	-	97.9
Net indirect taxes	-0.3	0.8	2.0	2.9	0.1	1.2	8.0	1.9	16.6
Total	**29.0**	**32.6**	**201.3**	**60.3**	**51.0**	**51.4**	**114.4**	**38.7**	**578.7**

TABLE 1C. Canadian Input-Output Tables - 1981
Final Demand Matrix

Billions of dollars

	Personal expenditure	Government expenditure	Fixed investment + inventory change	Exports	Imports	Total
Commodities						
Agriculture, Fishing, Forestry	2.7	-	0.2	5.7	-2.0	6.6
Mining and Quarrying	0.5	-	-0.6	13.3	-11.8	1.4
Manufacturing	58.0	3.3	25.5	59.7	-68.3	78.2
Construction	0.1	1.4	-	3.1	-1.0	16.4
Utilities	12.9	1.4	-	3.1	-1.0	16.4
Trade Margins	27.9	0.7	4.4	2.6	-0.3	35.3
Services	70.1	5.8	3.5	2.2	-5.0	76.6
Other[1]	3.3	5.0	0.5	9.0	-8.1	9.7
Primary Inputs						
Labour Income	7.0	45.0	-	0.1	-	52.1
Operating surplus	0.6	5.4	-	-	-	6.0
Net indirect taxes	13.1	0.4	1.6	1.1	3.6	19.8
Total	**196.2**	**68.8**	**87.0**	**96.8**	**-92.9**	**355.9**

TABLE 2. Alternative Presentation of Canadian Input-output Tables - 1981

Billions of dollars

	Industry Inputs									Final Demand						Gross Commodity Output
	Agriculture Fishing Forestry	Mining and Quarrying	Manufacturing	Construction	Utilities	Trade Margins	Services	Other[1]	Total Intermediate Inputs	Personal Expenditure	Government Expenditure	Fixed Capital and Inventories	Net Exports	G.D.P. at Market Prices		
Commodities																
Agriculture, Fishing Foresty	5.4	-	14.8	0.1	-	0.5	0.3	0.1	21.2	2.7	-	0.2	3.7	6.6		27.8
Mining and Quarrying	0.1	1.2	23.8	3.2	1.2	-	0.2	-	29.7	0.5	-	-0.6	1.5	1.4		31.1
Manufacturing	5.8	2.2	69.2	18.6	5.2	2.7	4.7	13.9	122.3	58.0	3.3	25.5	-8.5	78.3		200.6
Construction	0.3	0.7	0.8	-	1.4	0.2	2.7	-	6.1	0.1	1.8	51.9	-	53.8		59.9
Utilities	1.0	0.9	4.9	0.5	4.9	2.7	3.5	14.7	33.1	12.9	1.4	-	2.1	16.4		49.5
Trade Margins	0.7	0.5	4.4	2.9	0.6	0.5	0.6	2.8	13.0	27.9	0.7	4.4	2.3	35.3		48.3
Services	1.6	7.3	7.7	5.3	3.5	5.0	12.4	3.8	46.6	70.1	5.8	3.5	-2.8	76.6		123.2
Other[1]	1.2	1.6	12.2	1.7	2.0	3.6	4.9	1.5	28.7	3.3	5.0	0.5	0.8	9.6		38.2
Total Intermediate Inputs	**16.1**	**14.4**	**137.8**	**32.3**	**18.8**	**15.2**	**29.3**	**36.8**	**300.7**	**175.5**	**18.0**	**85.4**	**-0.9**	**278.0**	=	**578.7**
									+					+		
Primary Inputs																
Labour Income	3.0	5.0	42.7	18.0	18.2	25.8	33.1	-	145.8	7.0	45.0	-	0.1	52.1		197.9
Net Income, unincorporated Business	4.2	-	0.1	1.5	0.5	1.6	9.8	-	17.7	-	-	-	-	-		17.7
Operating Surplus	6.0	12.4	18.7	5.6	13.4	7.6	34.2	-	97.9	0.6	5.4	-	-	6.0		103.9
Net Indirect Taxes	-0.3	0.8	2.0	2.9	0.1	1.2	8.0	1.9	16.6	13.1	0.4	1.6	4.7	19.8		36.4
G.D.P. at Market Prices	**12.9**	**18.2**	**63.5**	**28.0**	**32.2**	**36.2**	**85.1**	**1.9**	**278.0**	**20.7**	**50.8**	**1.6**	**4.8**	**77.9**	=	**355.9**
									=					=		
Gross Industry Inputs	**29.0**	**32.6**	**201.3**	**60.3**	**51.0**	**51.4**	**114.4**	**38.7**	**578.7**	**196.2**	**68.8**	**87.0**	**3.9**	**355.9**		

[1] *Includes transportation margins and relatively small amounts of non-competing imports and unallocated imports and exports.*

The following sections touch briefly on the final demand and income components as they appear in the input-output tables, a fuller description of them is contained in the income and expenditure chapter.

i) The final expenditure approach

The first approach estimates gross domestic product by summing expenditures on final consumption of commodities, investment in tangible capital including inventories, net exports and direct purchases of factor services by final users. Final expenditure cannot be derived simply by summing the outlays on total output of all industries as this would involve a large measure of duplication; goods and services produced and sold to other industries for further processing, the intermediate inputs, must be excluded. In other words, only commodities purchased and not resold in the domestic market are defined as final expenditure items.

To illustrate the above it is helpful to consider the production of a suit of clothing. In the input-output system the production of wool appears as an output of the agricultural industry, the cloth woven from the wool appears as output of the textile industry, and the suit that finally emerges appears as output of the clothing industry. At each successive stage the total value of the previous processing reappears; to sum the output of each industry would include the outlays on output of the agricultural industry three times and of the textile industry twice, (once in the textile industry and once as part of the value of output of the clothing industry). The value of the suit as a final consumer good is the value added by the agricultural industry and by each successive stage of processing, and not the sum of the outputs at each stage of processing. In short, the value of the inter-industry flow of intermediate products does not form part of the value of final expenditure.

Between 130 and 140 final demand categories of expenditure are distinguished in the input-output system. The single most important group is personal expenditure sub-divided by purpose, or function of expenditure, for example, food, clothing, entertainment, education, medical care, etc. Under each category the input-output table shows the value of individual commodities purchased. In addition to the spending of individuals and families, personal expenditure includes the spending of private non-profit organisations such as universities, labour unions, private clubs, religious and charitable institutions.

Government current expenditure is another major category which is sub-divided by purpose of expenditure and classified according to level of government. Expenditure in this category is shown gross of any revenue derived from the sale of government goods and services. Revenues are shown separately and as negative entries. The negative entry avoids the duplication which arises when commodities sold by government appear once in government expenditure as the cost to government of providing the commodity, and once as the final expenditure of the purchaser of the good or service.

Non-residents' purchases of goods and services appear as the last major category of final consumption, and are sub-divided between domestic exports and re-exports of goods previously imported.

Investment in fixed capital includes separate estimates for construction and machinery and equipment. These categories cover goods not resold directly and are therefore considered final expenditure. They differ from other items of final expenditure inasmuch as they are not consumed in the current period but are used up over longer time periods in providing services and adding value to future final consumption. In a sense, the value of fixed capital appears in the estimates twice, once when the good is created and again when it is used up in the production process. The broad category is sub-divided into type of construction, machinery and equipment.

The value of physical change in inventories appears as a positive entry when production exceeds intermediate and final demand, and as a negative entry when use exceeds production. It is, in effect, a balancing item in the system which permits the correct measurement of current production. Because business accounting methods of valuation may depart quite sharply from the desired economic accounting concepts in periods of changing prices, valuation adjustments are made to convert business book values of inventory to the current value of physical change shown in the final use matrix.

The above components all contain elements purchased from non-residents, imports of goods and services, that must be excluded in order to remain true to the concept of domestic production. The final use matrix therefore contains a column for commodity imports in which they are treated as a negative adjustment at the total level; adjustment of individual categories is not feasible.

The valuation principal sustained throughout the final use tables corresponds conceptually with that adopted in the intermediate input table. Each commodity is tracked through the system at producer prices so that the actual price at which the purchase is consummated appears in the input-output system fragmented into the commodity producer price, purchased transportation services, if relevant, dealer mark-ups and commodity taxes levied after the producer price stage. The valuation of imports requires some modification as no strictly defined producer price is available. The practice in the

input-output system is to value imports at the Canadian border, including freight and insurance costs and import duties. It is assumed that under competitive conditions this valuation procedure will approximate domestic producers' values.

The bulk of gross domestic product is accounted for by the addition of final commodities. However, as noted at the beginning of this description, there are direct purchases of factor services by the final demand sectors and these must be added in to complete the measure. Purchases of labour or capital services occur primarily in the personal and government final demand sectors. They reflect wages, salaries and supplementary labour income paid to public servants, to those employed in the non-profit institutions, to domestic servants and to baby-sitters. Capital services reflect the use of capital by government and non-profit institutions.

Gross domestic product measured by summing the expenditure of those purchasing final goods and services is conventionally valued at market prices or the prices actually paid by purchasers. This means that all taxes on expenditure, more commonly known as indirect taxes, must be included and that subsidies must be excluded. Production is also measured before any allowance for the depreciation of fixed investment.

ii) Incomes generated by domestic production

The second, or income, method of measuring gross domestic product involves summing incomes originating from production within the geographical boundaries of Canada. Within the Canadian input-output tables these incomes appear as primary input costs mainly in the industry 'use' table, with smaller amounts appearing in the final demand table. Incomes and other charges against production appear in the rows at the foot of each table, while the columns in each table record these costs according to industry or final demand sector.

Factor incomes, so named because in a general way they correspond to the economic factors of production, labour and capital, are broken down in the input-output format into wages, salaries and supplementary labour income, net income of unincorporated business, and operating surplus. The operating surplus combines profits, other investment income, capital consumption allowances and valuation adjustments. Indirect taxes net of subsidies are a further charge against production.

Wages, salaries and supplementary labour income cover all payments, including payments-in-kind, commissions, tips, bonuses, directors' fees and taxable allowances and is measured before deduction of taxes and contributions to social security schemes; the supplementary component covers employers' contributions on behalf of employees for such items as unemployment insurance, pension funds, and other social insurance schemes.

Net income of unincorporated business includes net income of working proprietors from their own businesses, both agricultural and non-agricultural. It also includes net income of independent professionals such as doctors and lawyers and the net rent of persons from residential and non-residential property. The net income represents partly a return to the owners for their labour and partly a return for their entrepreneurship.

Operating surplus contains a mix of many factor incomes including business profits before taxes and dividend distribution, investment income other than net rental income of persons, capital consumption allowances and an inventory valuation adjustment. Both dividends and interest are regarded as transfers or redistribution of income rather than income originating in the receiving industry.

Conceptually, both the final expenditure and income measures yield identical results. The total output of commodities is equal to sales to intermediate and final users, or purchases of intermediate commodities plus earnings of factor services plus other charges against production. Deducting the common element, intermediate inputs, leaves final expenditure equal to income generated plus other charges. Factor services purchased by final demand sectors are common to both expenditure and income measures, being viewed as expenditures of the sector in the former case and as amounts received by factors of production in the latter.

iii) Industry value added or industry of origin of production

The third measure of gross domestic product is industry oriented. Two basic ingredients are required to derive the industry value added estimate. The first is the 'make' matrix - the total value of commodity outputs by industry. The second is the 'use' matrix showing the inter industry use of commodities.

To derive a measure of unduplicated production consistent with the expenditure and income measures, intermediate commodity inputs consumed by industries must be deducted from their gross outputs. In concept, this approach is identical to the other two methods, but because of the different methodology employed, it produces an industrial measure of production. By subtracting from the gross output of each industry those commodities used by them in production, the matrix produces the value added by each industry.

Further discussion of the industry value added approach follows later in this chapter. The final expenditure and income approaches are taken up

again in the chapter covering the income and expenditure accounts where they are central to that system.

c) Constant price input-output aggregates

The input-output system includes a set of matrices running parallel to the current price series but from which the influence of price changes has been removed. The process of eliminating price change from a time series to lay bare the underlying real movements in production is known as deflation. The input-output tables include the most comprehensive set of deflated accounts in the Canadian system.

The removal of price change from current price value series is an attempt to provide a proxy for the sum of the real quantities embodied in the series. Aggregating physical commodities of differing nature (eggs and automobiles) is clearly an impractical proposition. Employing an underlying principle that involves holding prices of commodities fixed at some selected base year, and from that period forward valuing production in the prices of that base year, yields values for diverse products that are both proportional to real production and additive.

The method used to derive constant price series is not in fact to value each years' quantities by fixed base prices, but rather to adjust current price value estimates by dividing with appropriate price indices. In a rigorous application of the deflation technique the price indices would be currently weighted (Paasche type index) and the quantum aggregates would be constructed using a base weighted formula (Laspeyre type). In practice, in the Canadian system, many of the price indices used are combined base and current year weights; the elemental indices employ base weighting but combined indices used in input-output deflation use current weighting. Current year weights are selected wherever such a choice exists, for example in the case of unit value indices.

Deflation is not without its problems. One of the more perplexing is how to ensure that any change in price due to quality improvement or deterioration in the commodity has been removed before constructing the price index. If part of the movement in price is due to quality change the deflation technique removes more, or less, than desired from the quantity measure. In a perfect statistical world improvements in the quality of a product would be represented as an increase in output. Although efforts are made in the Canadian price indices to eliminate changes due to identifiable quality change, there are many instances in which the determination of quality change is not feasible.

The selection of the base year for the index also poses problems. The prices of commodities change at relatively different rates and hence the relationship of their prices will vary at different times. This variability in the price differential can cause a significant difference in the trend in an aggregate constant price series, depending on the year which is selected as the base year. If a year is selected in which the price for a particular product is extremely high relative to other prices, the importance of that commodity and its influence on the overall measure of real output will be much greater than if a year had been selected in which its price had been relatively low.

The base year problem can be minimised through the use of a chain-linked index in which each year's output is calculated using the previous year as the base; successive years are mechanically linked. A chain-linked index has recently been developed for use with the income and expenditure accounts.

The technique applied in input-output for deriving the constant price estimates of gross domestic product is known as the 'double deflation' method. This involves the deflation of the gross output of commodities and the deflation of the intermediate input of commodities. The input-output tables lend themselves readily to this method given both the detailed articulation of commodities by industry and by final demand category, and the use of uniform basis of valuation (producers' prices) throughout the system.

A constant price valuation of outputs and inputs permits the estimation of real gross domestic production or real value added by industry through the subtraction of intermediate inputs from gross outputs. If indirect taxes are also netted out, the measure is at factor cost. This derivation of industry real output circumvents the unsolved problem of deflating certain elements of income, which would have to be faced if the alternative method of deflating primary inputs into industry were attempted.

Even the 'double deflation' technique requires deflation of those primary inputs purchased directly by the final demand sectors. The primary inputs involved are labour income and capital consumption allowances, and in both of these cases it is conceptually and practically possible to express them inconstant prices if no change in productivity is assumed.

The measurement of 'real' output in the area of government and non-commercial services presents a unique problem inasmuch as they have no market price in the conventional sense and the current price estimates are based on the cost of providing the service. The costs are, in effect, direct payments of wages, and salaries to employees. In order to derive a constant price series, the number of employees is multiplied by a fixed average wage and salary for the base year. Essentially, this results in a measure of real output solely reflecting the level of employment, with output per worker assumed to remain unchanged. When productivity is increasing the real output measure will be understated. Despite its evident weakness the method is the generally accepted practice.

Two deflation problems of particular interest within the context of the input-output framework are the

deflation of trade margins and indirect taxes. In the case of trade margins, the deflation of both wholesaler/retailer sales as well as costs would provide the best means of deriving constant price margins. However, data are not available to employ this method. The convention adopted is simply to apply a percentage rate to the constant price estimate of the commodity in question to derive a constant price margin. In fact, an average of the base year rate and the year being deflated rate is used. In the case of the wholesaler, the margin rate is based on the producer price valuation alone, but for retailers the margin rate is expressed as a percentage of the producer price of the commodity, plus the wholesaler margin, plus the transportation margin.

Deflation of indirect taxes poses similar problems to those encountered in certain factor cost deflation - it is not possible to associate the tax with the rendering of a specific good or service. To overcome this, constant price taxes can be calculated by applying the base year tax rate in successive years to the constant price value excluding tax for the selected commodity, or as the difference between constant price value including and excluding the particular commodity tax. Changes in tax rates in succeeding years have no effect on the calculation of constant price taxes for it is the base year price which governs the 'real' estimates in subsequent years.

d) Real domestic product by industry of origin

This series which started as an independent set of statistics is now better considered as a sub-system of input-output; the annual benchmark data have recently been tied directly to the input-output current and constant price tables described above. The estimate which covers the entire economy and measures the value added by industries in current and constant prices is an out growth of the index of industrial production which focussed mainly on goods-producing industries. First released in l963 as an extension of the more restricted indices of industrial production, real domestic product by industry covered the years from 1935 forward on an annual basis and from 1946on a quarterly basis. Initially released in index form, the estimates were subsequently released in constant prices both on an annual and monthly basis and in current prices annually.

Both the input-output and real output sub-systems focus on industrial statistics, use the same underlying concepts in terms of production boundaries, are establishment based, emphasize the domestic over the national concept and use similar methodology in estimating value added by industry. Both sets of measures depend to the extent possible on the 'double deflation' technique.

In recent years the benchmark data for both frames correspond with data derived from the input-output 'make' and 'use' matrices - the total output of an industry less commodities used. The real domestic product by industry series do not constitute a system in the sense of a balanced set of accounts such as exist in the other components of the system of national accounts. Rather they are a single statement of the level of industrial activity in the economy.

The gross domestic product by industry estimates are, on the one hand, more limited than the input-output tables which show far greater commodity and industry detail, but on the other hand they are more timely in terms of current years and the provision of monthly data.

Some of the differences which formerly existed between the series have now been eliminated and the commodity and industry classifications used in preparing benchmark estimates have been harmonised, as have the basic methodologies and the statistical inputs employed. For example, differences in the allocation of industries to sectors have now been removed. The underlying methodology of deriving real value added by the double deflation technique, used only partially in the former gross domestic product by industry of origin system, but more completely in the input-output system due to greater availability of detailed commodity flows has been extended to the industry system.

Although the above holds true for the period for which input-output tables are available, current annual and monthly estimates of real domestic product by industry continue to be produced outside the framework of the input-output system. In the more current estimates the basic methods of extrapolating the benchmark data differ fundamentally from the input-output double deflation technique. Due to data availability much greater reliance is put on measures of deflated gross output and labour input to project real value added. The independently produced industry estimates are found in 'Gross Domestic Product by Industry', Statistics Canada Catalogue 15-001.

e) Aggregate productivity measures

As with the industry real output, measures relating to productivity are primarily a derivative of the input-output system of accounts. The estimates do not constitute a system in the sense of a balanced set of accounts and in this respect they again resemble the industry estimates. The series, commencing with the year 1946, cover commercial industries responsible for about 80 percent of the gross domestic product and are published in index form, on an output per person and output per person-hour basis. The productivity publications also include indices of compensation per person and per person-hour and unit labour cost.

The productivity series published within the system of accounts depend on the constant price gross domestic product at factor cost and labour input estimates of persons employed and hours worked. The indices are simply an arithmetic expression of the relationship between real output and labour input and changes cannot be attributed to any single or any particular combination of resource inputs. Productivity changes are influenced not only by

quantities of inputs employed but by a number of other qualitative variables, such as the skill of the work force, managerial performance, capacity utilisation, materials flow, product mix and technological change, to name only some.

The most important principle in deriving productivity estimates is that the measures of output and input be consistent. The coverage and units surveyed should, as far as possible, be the same, so that it is in fact those being employed in the production process that are being included in the denominator of the productivity fraction. In general the series used in the Canadian series are both establishment based. Labour inputs include not only paid workers but others engaged in the particular productive activity being estimated, such as own-account workers, working employers and unpaid family workers. In the hours-worked series, adjustments are made to eliminate reported hours paid to workers on vacation and sick leave.

In constructing the estimates, the output of non-commercial industries is removed and the labour income series are similarly adjusted. The labour income series attempts to include all cash payments plus supplementary payments in kind and to cover all persons employed for gain including an imputed income for self-employed workers. The amounts included for self-employed are somewhat arbitrary and based on the average paid worker's hourly compensation in like industries.

Canadian productivity series do not include estimates for non-commercial industries primarily because of the difficulty of measuring real output in the largely non-marketed segment of the economy. In the main, output in these industries is conventionally measured by labour input - clearly to calculate a ratio in which labour input serves as both numerator and denominator yields a not very helpful constant productivity estimate.

Other features of the input-output system

a) Unit of classification

The emphasis in input-output analysis is on the interrelationship of commodities and producing units in the economy. The sectoring of data responds to this by focussing on the industrial structure of the country where the groupings are homogeneous as regards the character, technology and cost structure.

Although generally best served by the classification of transactors along industry lines, the allocation of final demand in the input-output tables is based on institutional sectors. The institutional sectoring provides a direct link with the income and expenditure accounts which are almost entirely geared to the analysis of production in terms of its impact on institutional sectors. A precise definition of institutional sectors will be delayed until the discussion of the income and expenditure accounts but in brief, they are groupings of ultimate consuming or investing units with similar motivation and behaviour patterns.

The statistical unit most suitable for industrial classifications is the establishment, the unit upon which the input-output system is built. An establishment is defined as the smallest unit which is a separate operating entity capable of providing all elements of basic industrial statistics. The establishment is predominantly engaged in one activity and may be a store, plant or farm. It is assigned to an industry on the basis of its activity and according to the Canadian Standard Industrial Classification.

A problem posed by the use of the establishment classification occurs when several units belong to a single company and key series are only available at the broader unit level. When this occurs, as it frequently does with respect to financial data, estimates must be imputed to satisfy the input-output requirements.

b) Producers' and purchasers' prices

In order that there be internal consistency in the valuation of commodities in the input-output system, all sales and purchases of intermediate and final commodities are valued at producers' prices, the equivalent of sales prices at the 'factory gate'. Purchasers' prices include trade and transportation margins to move commodities from the producers' 'factory gate' to the purchaser and commodity taxes levied after leaving the producers' plants. There is no difference in the aggregate value of purchases whether the producer or purchaser price method is adopted; it is entirely a question of presentation and analytical use.

The producer price principle has several important ramifications. It means that the actual price paid by an industry for an intermediate input may be broken down into several parts - the producer's price for the commodity, any transportation or distribution costs which may be incurred and charged to the purchaser by an independent carrier, and indirect taxes levied on the commodity after the producer's final processing stage. Each component of the actual transaction value will appear as the purchase of a separate intermediate input by the using industry or a separate commodity by the final demand sector.

This methodology ensures that commodities will be valued consistently throughout the system. Assuming that the price received by the producer is the same, the production of one barrel of oil will be recorded at the same level of valuation (producer price) as another throughout the system regardless of the industry in which it is purchased as an intermediate input. Differences in costs between industries or establishments will be reflected in their purchases of peripheral transport and dealer services which appear in the tables as purchases of separate intermediate inputs. This valuation principle is important in a system which, in large part, is devoted to the establishment and analysis of relationships between industries and commodities and in which the total value of sales and purchases is equal.

Services used by an establishment but self-produced in the course of engaging in its primary activity are not considered purchased intermediate inputs but part of the value added by that establishment. The value of such goods or services will be embodied in the producer's price for the output of the establishment and will be reflected in its factor costs.

c) Industry and commodity classification

The principal systems used to classify transactors and transactions are the industry and commodity classifications. The industry classification used in the input-output system is based on the Canadian 'Standard Industrial Classification Manual', Statistics Canada Catalogue 12-501, which was designed to accommodate establishment based data, the building blocks of the input-output system. The commodity classification used was specifically designed for the input-output system. It was intended to provide concordance between a variety of commodity classification systems employed throughout the statistical system. Consistent classification of commodities is a crucial element in the construction and balancing of input-output tables. This means that a commodity must be coded consistently whether it be as part of a manufacturer's output, as an item being transported by rail, plane or boat, as an export or import, or as a purchase by a final consumer.

Within the context of the input-output system itself and the broader framework of all components of the national accounts, consistency in classification of statistical data plays a crucial role in the integration process. Commodity and industry classifications provide the common denominator between sales and purchases in input-output tables when data are gathered from diverse sources. For example, failure to classify the commodities made on a consistent basis with commodities used destroys the possibility of achieving a balance between the supply and demand for any particular commodity. They are also an essential tool in bringing about the integration of statistical series common to input-output and income and expenditure accounts; for example, the industrial distribution of wages and salaries which appears in both systems could not be matched unless both recognized the same grouping of units within the same industrial classification boundaries.

d) Exceptions to standard classification and measurement techniques

Although the industry classification scheme and industry measures follow closely the Standard Industrial Classification Manual and traditional methods of measurement, there are exceptions. In some cases these are unique to the input-output system; in others, the treatment is also found in the income and expenditure accounts.

i) Synthetic industries

The most notable deviation from the industrial classification is the construction of 'dummy' or synthetic industries. This is a technique whereby a number of goods and services originating in different industries, whose use is related to a common activity and for which there is limited statistical information on consumption, are grouped into synthetic industries and commodities.

An example of this is in respect to office supplies. Office supplies constitute a broad and mixed bag of commodities used as inputs by a wide range of industries - the precise commodity composition of industry inputs is not known. An office supplies industry is created with an output equivalent to the known total use of office supplies and a corresponding single commodity which can be distributed as input into using industries. Estimates are made of the commodity inputs into the dummy industries but no primary inputs are assigned to them, so that their output is equal to their intermediate inputs.

The use of these fictive industries and commodities simplifies the analysis of the data without sacrificing information of a critical nature. In the Canadian system seven such groupings are constructed covering office supplies, cafeteria requirements, laboratory supplies, travel and entertainment, advertising and promotion, operating supplies and transportation margins.

ii) Measuring production for banks and near-banks

The main exception to the normal method of measuring production occurs in the banks and near-banks. The reliance of financial institutions on interest rate differentials for their profitability, that is, charging higher interest rates on funds lent than they pay on borrowed funds, results in small or negative production when standard national accounting methodology is followed. Rather than treating interest receipts as part of operating revenue they are netted against interest payments on the expense side of the account. This treatment generally results in a substantial negative interest flow which ultimately lowers the measure of income or product originating in the financial intermediaries.

A significant part of the excess of interest receipts over payments may be viewed, however, as revenues received for services rendered by financial intermediaries but for which they make no specific charge. If this assumption is made and the differential is treated as imputed revenue, the negative impact on the expense side of the account is removed and the measure of income and product originating in the industry is raised. The rationalization for this treatment is that interest paid to depositors is less than pure interest rates would dictate and should be raised, and that interest received from borrowers is higher than pure interest would dictate and should be lowered. The net result of these adjustments is considered to be equivalent to the uncharged-for service output of the institution for which an imputation is required.

iii) Output of trade industries

As already noted the wholesale and retail industries are not shown as consumers and producers of commodities in which they deal; rather, their outputs are defined as the gross margins on goods (sales less cost of goods sold), and their inputs are defined accordingly as expenses less cost of goods purchased for resale. The outputs of the trade industries are not based on a particular type of transaction but on the sum of all transactions occurring in the industry; thus, if a wholesaler makes a retail type sale to an individual, the margin generated is treated as part of the wholesale trade industry.

iv) Own-account construction

In the construction industry a departure is made from the usual classification principles applied to establishments. The industry consists not only of establishments engaged in construction but also includes the own-account construction activities of establishments classified to other industries. This is a departure from the total activity concept normally applied in the classification of establishments. This broader treatment of the construction industry is necessitated by the lack of detail which would permit the separation of construction inputs, both commodities and factor services, into those flowing to construction contractors and to own-account activities. The procedures followed automatically reduce the output and input requirements of those industries in which own-account construction takes place.

v) Mining and refining classification

A number of possibilities exist for the classification of mining, smelting and refining establishments due to the mixture of integrated and non-integrated operations, and the option of selling ores and concentrates or of having them processed on a custom service basis. The input-output treatment of mine production places a value on the production of the mine establishment at the ore and concentrate stage. The domestic net value of ores and concentrates produced is routed as an input to the smelting and refining industry. Smelters and refiners in the input-output system are considered as producers of metals and the valuation of the output of metals includes the smelting and refining costs.

vi) Real estate classification

The industrial distribution of productive activity associated with real estate renting is, for reasons of data constraints and methodology, dependent on the form of business organization undertaking the activity. If rents are received by corporations, the production and income originating is attributed to the industry to which the corporation is classified, whereas if the same activity is undertaken by an unincorporated business it is automatically classified to the finance, insurance and real estate industry.

vii) Tax margins

In general, taxes may be divided between those levied on expenditure and those based on income, the former being labelled indirect and the latter direct. Taxes deductible as expenses by business but not based on expenditure, also fall within the definition of indirect taxes. The input-output system is concerned with identifying indirect taxes, and further distinguishing those related to quantities or values of commodities sold or produced, from those not identified with any commodity. The former type include federal excise taxes, provincial sales taxes, import duties, gasoline taxes, liquor gallonage taxes and profits of provincial loiter commissions; the latter include property taxes, business motor vehicle licenses, capital and place of business taxes.

Indirect commodity taxes constitute a part of the difference between producers' and purchasers' prices and together with transportation, distribution and storage margins, account for the full difference.

viii) Balancing the system

The input-output tables or sub-matrices contain no discrepancy item specifically labelled as such. It is obvious however, that the task of equating the supply and disposition of close to 600 commodities is not possible in a less than perfect statistical world. Due to the immense complexity of the system, differences do exist between the measurement of the supply and disposition of commodities despite the use of all available data and painstaking analysis. Some of the more prominent causes of discrepancies are valuation, classification, data gaps and timing.

Where commodity imbalances remain after all reconciliation techniques have been exhausted, the imbalance is incorporated in the estimates of inventory change, based on the judgement that the measure of inventory change is the most likely to be in error. If however, this solution results in unreasonable inventory movements, further efforts are made to uncover the source of the imbalance. Because industry operating surpluses are by their very nature a type of residual, the estimation of this series may well conceal some of the imbalances in the system.

Uses of Input-Output

The input-output component of the national accounts tends to have a more restricted range of users than the income and expenditure accounts. It is not as widely understood, its comprehensive nature and detailed presentation prevents early release of tables, and there are perhaps fewer engaged in the type of structural analysis for which the system is ideally suited than in current trend analysis. Despite this, there are a wide variety of users and uses because the tables provide the only comprehensive presentation of fairly detailed commodity group origins and uses and industry cost structures. Given the range of data contained in the system, it permits both individual firm's sales forecasts

and assessment of the impact of broad economic programmes.

Being designed to provide integrated information on commodity and industry relationships, the system has been used as the basis for models of the operation of the economy. The major contribution of such models is in facilitating the analysis of direct and indirect effects on commodity output and industries, of changes in final demand and indeed, of resource supply. They also reveal important information on inter industry dependency and the extent to which production satisfies intermediate or final demand.

In the case of automobile production, for example, a vast array of commodities such as steel, rubber, glass, etc., are required; these commodities themselves need a further range of commodity inputs. The production of automobiles thus requires a long chain of resources, not only material but human and technological. If the relationship of these inputs to the output of automobiles is stable, mathematical models based on input-output tables can be built that will estimate the impact of the demand for automobiles on all other industries involved in the chain, either directly or indirectly. The model can also be formulated to estimate incomes and revenues generated by the industrial activity and to determine the impact on final demand, thus closing the circular flow of economic activity.

The above type of analysis has been widely applied in the planning process, in the assessment of resource requirements and the impact of shortages of strategic materials. In this respect the input-output system lends itself to more sophisticated mathematical analysis than the other components. Knowledge of matrix algebra helps to fully appreciate the impact of the initial spending of a final demand sector and its multiplicative effect on the entire economy and to estimate the output price changes necessary to change sector incomes by a certain amount. Given the sheer size of the system, its potential has been expanded dramatically with the availability of computer technology, both in terms of its construction and its use.

The input-output tables are the major support system for much of the analysis of productivity which is currently being undertaken and have also proved useful in the analysis of costs and prices by providing detailed information on cost-price structures. More important but perhaps sometimes overlooked is the role played by the input-output system in improving the overall consistency of a vast range of economic statistics. The completion of the system has promoted the integration of statistical surveys and frame works, eliminated certain statistical gaps and has provided a massive reservoir or data bank of compatible economic data over time.

Links and reconciliation with the Income and Expenditure Accounts

Both the input-output and income and expenditure systems include measures of final unduplicated production in Canada. To this extent they are conceptually identical, using the same conventions, definitions and broadly similar classifications in presenting both incomes arising from production and final expenditure on production. There is a single unambiguous measure of production contained in both systems, the estimate of Gross Domestic Product, which may be obtained from either system. The two systems are not only linked but in fact produce identical current price estimates of GDP.

The production account is the cornerstone for both systems, but from this cornerstone of gross domestic product the architecture of the two components is radically different. The buildings were designed to fulfil entirely different functions. The input-output component deconsolidates the production process - it puts it under the microscope and examines the producing industries, what commodities they produce and for whom, and how they are produced. The income and expenditure component focusses on how final production is used and the distribution of income generated by it. Rather than industrial sectoring, it concentrates on institutional sectoring in the sense that it looks at broad homogeneous groupings of society with similar patterns of behaviour, and measures their consumption, investment, type of income and saving.

Although no conceptual differences remain between the two systems and few statistical differences since the most recent comprehensive revision, minor reconciliation problems still remain. These stem from different estimates in two components of the systems, one relating to inventory change and the other to operating surplus and its income and expenditure accounts equivalent - profits + investment income + capital consumption allowances + inventory valuation adjustment. The same aggregate measure of gross domestic product is maintained in the two systems and differences due to the above are absorbed in the balancing process.

The difference in inventory estimates arises because the commodity source and disposition balance methodology used in the input-output system, which ascribes small imbalances to inventory change, yields different results from direct survey estimates employed in the income and expenditure accounts. The difference between the input-output operating surplus and the income and expenditure equivalent is due to the fact that the former system uses the establishment and the latter system the company as the basic unit for estimating certain income components. For example, in the case of profits, which are not usually available at the establishment level for multi-establishment concerns, estimates must be based on indirect data, whereas company based estimates are usually based on reported data. These procedures lead to differences in both the broad industrial distribution of data and in the component total.

Having noted the factors responsible for minor differences in some of the components of the two systems, for reasons of perspective, major components which are now identical are listed below. Of the expenditure categories, consumer expenditure, machinery and equipment, construction, exports, imports and government expenditures are now the same. Of the income items, wages and salaries, supplementary labour income, net

income of unincorporated business, indirect taxes and subsidies are identical.

With the almost complete reconciliation of the two systems accomplished, certain features of primary importance in maintaining the closeness stand out. The coordination of the revision cycles of the two systems is essential. The classification of new data whether it be in the industrial, commodity, or institutional field must be the subject of continuing discussion. Finally, close contact and constant exchange of information between staffs working on the systems is critical.

Before leaving this brief description of the links between input-output and the income and expenditure accounts two points remain. The first relates to constant price estimates and the second to the timing of release of the two estimates.

Constant price estimates are produced for expenditure on gross domestic product in both the input-output and income and expenditure systems. In addition to the minor reconciliation problems remaining in current price estimates, there is a further complication relating to constant price estimates. The input-output tables express values in producer prices plus separate margins for transportation, distribution and taxes, whereas the income and expenditure accounts use purchaser prices. The separate deflation of commodities at producer prices and of margins and taxes is unlikely to yield the same result as the deflation of purchaser price estimates undertaken at a different level of detail and with different price indices. Therefore, even identical current price series may result in different constant price series due to the deflation technique.

The reconciliation discussed above relates to that which takes place at the time of the completion of the most recent annual input-output estimates. In a sense it is a benchmark reconciliation. The income and expenditure accounts are, of course, available quarterly and annually on a more timely basis. These initial estimates of the income and expenditure accounts are in many instances based on different data and use different methods and it is only later that they are revised and reconciled with the input-output system.

Chapter 4

Income and Expenditure

General

The income and expenditure accounts are the best known and most widely used component of the Canadian System of National Accounts. The accounts were first published on an annual basis in the latter half of the 1940's. In 1952,estimates covering the historical period 1926-50 were published with basic references, and shortly afterwards, quarterly estimates for the years 1947-52 were released. Since that time, annual and quarterly series have been published on a regular and current basis. A detailed recording of the historical background may be found in 'National Income and Expenditure Accounts - Volume 3', Statistics Canada, Catalogue 13-549.

Essentially the accounts start at the point that the input-output tables finish - the measurement of gross domestic product. They record GDP using two methods - by type of purchaser and by type of income generated by production. To the extent that they do only that, they are similar to parts of the input-output system. However, the direction in which they extend the statistical analysis of the economy, the way in which they link economic theory and business accounting practices, and the bridging role they perform between the production and financial systems are the special features which set them apart. Their timeliness, presentational style, and historical continuity have put them in the forefront of all other systems for current analysis.

Many of the main aggregates associated with the production accounts have been defined in describing the input-output system. There are however, some broad aggregates of particular significance to the income and expenditure accounts, such as national income, personal disposal income and final domestic demand, that remain to be defined.

Extending the statistical analysis of the economy

The major contribution made by the income and expenditure accounts is in tracing the impact of production, both direct and indirect, through four broad sectors of the economy: persons and unincorporated business, government, corporate and government business enterprises and non-residents. These institutional type sectors, or transactors, are defined in such a way that the units in each one constitute a grouping of entities expected to behave in broadly similar ways.

The selection of only four sectors is conventional and minimal in terms of behavioural patterns; the number of sectors could be extended, but in balancing comprehensibility and complexity, and for reasons of data availability, the summary presentation has been limited to four sectors. As will be seen later, the financial flows system expands the sectoring: the corporate and government business enterprise sector is divided between financial and non-financial concerns and the financial sector further sub-divided. The choice of sector boundaries and the allocation of units to specific sectors has important ramifications throughout the system of accounts insofar as it delineates the boundaries of production and the valuation placed on its measurement.

The theoretical model underpinning the accounts develops three sets of accounts for each sector - a production account, an income and outlay account, and a capital finance account. The production account records total production expenses and revenue from gross sales of goods and services. Primary production expenses, such as wages and salaries, are carried down from the production to the income and outlay account and distributed as income to the sectors contributing factor services, while revenues from final production are carried down and shown as outlays of the sector making the final purchase. The income and outlay account also records current transfers between sectors, for example, income tax as payments by persons and receipts by government. The balance in the income and outlay account, in other words the saving or dissaving of the sector, is carried down to the capital finance account where it is offset against capital expenditure of the sector.

As the major part of production originates in the business sector, the Canadian System of National Accounts prepares only a single consolidated production account for all sectors. In the process of consolidation, all intermediate products net out and the account records only primary expenses on one side and revenues from sale of final goods and services on the other.

The main difference between the consolidated production account and the summary income and expenditure based estimates of gross domestic production, all of which arrive at the same aggregate, is in the different perspective they give. The consolidated production account views the economy through the eyes of a business accountant, with output being the sum of modified revenue and expense accounts of individual productive units in the economy. The income and expenditure based aggregates are presented from the viewpoint of an economic accountant with expenditures presented as major demand components and incomes as returns to major factors of production. Items that appear as primary expenses in the consolidated production account, for example, wages, appear as incomes in the income based estimates of gross domestic product, while revenues in the production account from such items as sales appear in the expenditure based estimates as outlays on consumption and investment.

Two sets of accounts are constructed in the Canadian system for individual sectors, one relating to current income and outlay and the other to capital transactions. The income and outlay account records income accruing to the sector from its productive activity plus income

resulting from transfers from other sectors (money flows for which there is no counterpart flow of goods or services). In a similar fashion, the outlay recorded is both expenditure on final production as well as transfer payments to other sectors. In any consolidation of the sector income and outlay accounts, this redistribution of income and purchasing power brought about by transfer payments nets out, one sector's income being another sector's outlay. For an individual sector, however, the inclusion of transfers provides a more accurate picture of the economic role of the sector and of its effective demand over the country's output.

The current income and outlay accounts record main income flows, outlays, and transfer payments, corresponding with type of factor service involved, purpose of outlay, or source of transfer payment. The sector accounts provide a substantial amount of information on a from-whom to-whom basis. For example, wages and salaries received by persons are shown by paying sector, namely, received from business, government, or from persons themselves; they are also recorded as outlays of those sectors respectively. Outlays by the personal sector are recorded in their accounts according to the sector from which commodities are purchased and as receipts by the selling sector.

The units in each sector are described at length in a later section. In most cases the classification is self evident; however, the treatment of unincorporated business is unique in that it has a split personality, appearing in the business sector in the production account but in the personal sector in the income and expenditure and capital finance accounts.

Although the sector accounts follow the same principles, the individual sectors differ in appearance. For example, the income of the persons and unincorporated business sector is composed mainly of wages and salaries, net income of unincorporated business and transfer payments, while the corporate and government business enterprises sector income is largely profits and investment income. In the government sector nearly all income results from direct and indirect taxes with only a small amount from investment.

Transfer payments figure prominently in the income and outlay accounts and are briefly described before proceeding to the capital finance accounts. They are transactions in which there is no 'quid pro quo'. They are the vehicle by which income accruing to a sector by virtue of its productive activity is redistributed to other sectors. Such payments have the effect of lowering the consumption or investment of the pay or and raising that of the payee.

In most instances transfer payments are the means by which income is redistributed among units within a sector. Incomes from one group of persons are routed out of the sector to the government and then channelled back to the same sector but to a different group of persons. The major types of transfer payments in the system arise through taxation and government spending. Income is taken out of the hands of the personal, business and non-resident sectors by government, and recycled in the form of social welfare payments, subsidies and interest on the public debt.

The second set of sector accounts contains capital transactions. The source side of the capital finance account shows the sector's gross saving, composed of the balance from the income/outlay account which may be positive or negative, plus allowances for capital consumption, plus any capital transfers from other sectors. (The distinction between current and capital transfers is not always clear in practice, but in theory hinges on the intent or purpose of the transfer.) The disposition side of the account records fixed investment and inventory change. The account is balanced either by an excess or shortfall of saving over capital formation, such a balance representing net lending when positive, or net borrowing when negative.

The schematic presentation on page 13 shows the income and expenditure accounts. It is less complicated than the input-output component and simply shows the summary production tables for the overall economy and the income and outlay and capital finance accounts for each of the main sectors. Examples of the transactions are also included in each account. The tables within the main block are easily identified with published tables. Arrows link the corresponding aggregates in the input-output and income and expenditure blocks. Table 3 on page 34 and 35 presents a condensed version of the income and expenditure accounts for the year 1981.

The above description of the income and expenditure set of accounts has focussed on the principal structure of the framework. A great number of derivative tables and much supplementary information have been developed over the years to satisfy analytical needs. Within the framework of the accounts the system provides detailed supplementary data on government transactions and personal expenditure, special tables showing the value of imputed transactions, and further analysis of corporation profits. Provincial and industrial distributions of selected series are also available.

The relationship of economic to business accounting

The conceptualisation of the economic accounts lay in the domain of the economic theorists, who pointed the way towards the significant components, balances and relationships which govern the structure and behaviour of an economy. In the case of the income and expenditure accounts there was a happy coincidence between the basic constructs around which macroeconomic analysis centred and the principles governing business accounting. Some rearrangement and modification of basic business accounts gave operational definition to the theorists' concepts.

Both the economic accounts and business accounts are based on a double-entry system. Each account is a balancing statement with debits (outlays or uses) offsetting credits (income or sources). The objectives of both are to present a fair picture of the state of an entity that both enlightens and assists in the decision making process.

The pattern of business accounting is most easily recognized in the context of the business sector of the income and expenditure accounts, but the personal, government and non-resident sectors follow the same principles even though the approach is a more pragmatic one. The three basic economic accounts -production, income and outlay and capital finance - are derived from the income, retained earnings and changes in financial position statements of the business accounting world.

The business income statement records operating and non-operating revenues of the firm on one side of the account and its charges against revenue such as purchased materials, wages and salaries, depreciation, inventory change, interest and indirect taxes on the other. By a rearrangement of some of the items, the income statement can be transformed into the production account more familiar to economic accountants.

The total revenue of the firm is converted to an output value by adjusting sales revenue by the change in inventories of finished goods and goods-in-process and by deducting non-operating revenues such as interest and dividend receipts. The resulting gross output measure is converted to a net measure by subtracting the cost of current purchases of goods and services, including changes in raw material inventories. The balance in the account is maintained by appropriate adjustment of the expense side of the account to remove all entries other than wages, capital consumption allowances, net interest payments, indirect taxes and profits.

The income and outlay economic account is derived from the business income and retained earnings statement. The business retained earnings statement records net income before tax on one side, and the distribution of that income through dividends paid and corporate profits tax on the other - retained earnings balance the statement. The conversion to an economic account requires that net income before tax be adjusted to an operating profit concept by removing dividends received and capital gains on sales of fixed capital and securities and adding depletion charges. This add-back of depletion charges is necessary because natural resource discoveries are not treated as capital formation in the national accounts and therefore depletion allowances cannot be charged against profits. Counterpart adjustments are made to the distribution of profits side of the account - the retained earnings figure is redefined by these adjustments to include depletion allowances and exclude capital gains.

The business balance sheet or change in financial position statement provide the material for the derivation of the capital finance account in the income and expenditure accounts. It also provides the data for changes in financial assets, liabilities and net worth in the financial flows and balance sheet accounts.

The use side of the capital finance account records changes in fixed assets before depreciation (purchases of plant and machinery less any sales) and inventory change taken from the balance sheet. The source side of the account records retained earnings, as adjusted in the income account (excluding capital gains but including depletion allowances), plus depreciation allowances. The balancing item is the equivalent of the net change in financial assets which appears in the changes in financial position statement in business accounting. In national accounting terminology this balance represents net lending or borrowing, or surplus or deficit in the case of government.

This summary of the relationship between business and economic accounts grossly simplifies the translations that take place between business records and income and expenditure accounts. It ignores such adjustments as those made to inventory valuation and depreciation allowances, the problems associated with fitting data from the non-business sector of the economy into the accounting framework, and the distinction between transfers and other transactions. However, as over three-quarters of production originates within the business sector, the linkage provides a realistic perspective on both the logic and the rationale for the direction of development followed by the income and expenditure accounts.

Aggregates associated with the income and expenditure accounts

Some important concepts and definitions relating to gross domestic product and the three methods of measuring production have already been discussed. The overview chapter outlined the boundaries of production, net and gross measures, the distinction between national and domestic production and market price and factor cost, while the input-output chapter explained the various methods employed to measure production. As these concepts and definitions apply equally to the income and expenditure accounts the reader may wish to review them before proceeding.

One distinction between the input-output tables and the income and expenditure accounts that should be noted is the different treatment of the statistical discrepancy between the conceptually identical expenditure and income based production estimate. In the input-output system any imbalance that remains after all steps have been taken to balance the sales and purchases of each commodity group is attributed to the change in inventory category - in effect, the discrepancy item is assumed to be an unmeasured inventory change. In the income and expenditure accounts any difference between the expenditure and income based estimates is not attributed to a specific component but is shown as a discrepancy item, the higher aggregate is reduced and the lower one raised by one half of the discrepancy.

A number of important measures closely associated with the income and expenditure accounts have not yet been defined. These include net national and domestic income at factor cost, personal income, personal disposable income and final domestic demand.

a) Net National and Domestic Income

   National income is defined as the sum of all incomes of residents of a country arising as a result of the current production of goods and services; some of that income is generated abroad. Domestic income is the sum of all incomes derived from economic activity taking place within the geographical

TABLE 3 Canadian Income and Expenditure Accounts - 1981

Billions of dollars

Gross Domestic Product

Income based		**Expenditure Based**	
Wages, salaries and supplementary labour income	197.9	Personal expenditure on goods and serivces	196.2
Corporation profits before taxes	37.7	Government current expenditure on goods and services	68.8
Interest and miscellaneous investment income	32.5	Government investment - fixed capital	9.4
Accrued net income of farm operators	3.7	- inventories	-0.2
Net income of non-farm unincorporated business	14.1	Business investment - fixed capital	76.7
Inventory valuation adjustment	-7.2	- inventories	1.4
Net domestic income at factor cost	278.7	Exports of goods and services	96.9
Indirect taxes less subsidies	36.4	Deduct: Imports of ggods and services	93.0
Capital consumption allowances	40.7		
Statistical discrepancy	0.2	Statistical discrepancy	-0.2
Gross domestic product at market prices	356.0	Gross domestic product at market prices	356.0

Consolidated Production Account

Primary expenses arising from domestic production		**Revenue from domestic production**	
Wages, salaries and supplementary labour income paid to persons	197.9	Sales by business to persons	185.0
Net income of unincorporated business	17.8	to government	26.0
Profits and other investment income	70.1	to business	78.1
Inventory valuation adjustment	-7.2	to non-residents (net)	8.9
Indirect taxes	46.0	Sales by persons to persons	7.0
Deduct subsidies	9.5	Sales by government to government	51.2
Capital consumption allowances	40.7		
Statistical discrepancy	0.2	Statistical discrepancy	-0.2
Gross domestic product at market prices	356.0	Gross domestic product at market prices	356.0

As over 80 % of production is estimated to take place in the business sector, the Canadian system does not produce separate production accounts for each sector.

A User Guide to the Canadian System of National Accounts
Catalogue 13-589E. Occasional

Income and Outlay Accounts

Persons and Unincorporated Business				Government				Corporate and Government Business Enterprises				Non-residents			
Income		**Outlay**		**Income**		**Outlay**		**Income**		**Outlay**		**Income**		**Outlay**	
Wages, salaries and supplementary labour income	197.9	Personal expenditure on goods and services	196.2	Indirect taxes	46.0	Current expenditure on goods and services	68.8	Profits and other investment income	70.1	Investment income paid		Receipts from sales of goods and services	93.0	Pruchases of goods and services	96.9
Net income of uncincorporated business	17.9					Interest paid to non-residents	1.8	Inventory valuation adjustment	-7.2	to persons	39.8	Investment income	15.3	Investment income	4.0
Investment income				Investment income				Investment income from non-residents	3.2	to government	20.9				
- from domestic sectors	39.8			- from domestic sectors	20.8					to non-residents	13.5				
- from non-residents	0.7			- from non-residents	0.1										
Transfers from		Transfers to		Transfers from		Transfers to		Transfers from		Transfers to		Transfers from		Transfers to	
Government	35.3	Government	55.5	Persons	55.5	Persons	35.3	Persons	5.4	Government	12.8	Persons	0.4	Persons	0.5
Corporations	0.6	Corporations	5.4	Corporations	12.8	Business		Government		Persons	0.6	Government	0.9	Government	1.1
Non-residents	0.5	Non-residents	0.4	Non-residnets	1.1	- interest	20.4	- interest	20.4	Non-residents	0.1	Corporations	0.1		
						- subsidies	9.5	- other	0.9						
						- other	0.9								
						Non-residents	0.9								
		Saving	35.3			Saving	-1.3			Saving	5.1			Saving	7.2
Total	**292.7**	**Total**	**292.7**	**Total**	**136.3**	**Total**	**136.3**	**Total**	**92.8**	**Total**	**92.8**	**Total**	**109.7**	**Total**	**109.7**

Capital Finance Accounts

Persons and Unincorporated Business				Government				Corporate and Government Business Enterprises				Non-residents			
Source		**Disposition**		**Source**		**Disposition**		**Source**		**Disposition**		**Source**		**Disposition**	
Saving	35.3	Investment		Saving	-1.3	Investment		Saving	5.1	Investment		Saving	7.2		
Capital consumption allowances	11.5	- fixed capital	23.5	Capital consumption allowances	5.3	- fixed capital	9.4	Capital consumption allowances	23.8	- fixed capital	53.2				
		- inventories	0.7			- inventories	-0.2			- inventories	0.7	Net capital transfers from persons	-1.1		
		Net capital transfers to non-residents	-1.1												
		Net lending	23.7			Net lending	-5.2			Net lending	-25.0			Net lending to Canada by non-residents	6.1
Total	**46.8**	**Total**	**46.8**	**Total**	**4.0**	**Total**	**4.0**	**Total**	**28.9**	**Total**	**28.9**	**Total**	**6.1**	**Total**	**6.1**

boundaries of the country; some of that income is generated by non-residents. The income aggregates comprising employment income, rent, profits and other investment income are generally known as factor incomes as they broadly correspond to the economic factors of production, labour and capital. Income received as transfers, such as pensions or family allowances, is not included as they are redistributions of factor incomes and to include them would be to double count incomes. The classification of income types is not always clear cut: net income of unincorporated business represents in part a return to labour and in part a return to capital.

Although national income does not differ significantly from domestic income it is lower in Canada to the extent that factor payments to abroad exceed those received from abroad. Since the recent comprehensive revision of the Canadian income and expenditure accounts more prominence is given to net domestic income at factor cost. Either national or domestic income at factor cost is normally used in resource allocation analysis.

b) Personal income

An important and commonly used aggregate in the accounts is personal income. It consists of the sum of all income of resident persons from productive services rendered, plus all transfer incomes from government, business and the non-resident sector. The main component is labour income but also included are net income of unincorporated business, interest, dividends and other investment income of persons, including that accrued on behalf of persons by life insurance companies, trusteed pension funds and other similar institutions. Personal income is measured before tax deductions and contributions to social security schemes paid by employees.

In the Canadian System of National Accounts 'persons' and 'personal sector' are defined to include trusteed pension plans, and private non-commercial institutions such as universities, labour unions, professional organizations, fraternal societies and charitable institutions. The income of these groups is therefore included in the coverage of personal income. Because of this broad definition of the personal sector it is important not to interpret the aggregates and their derivatives, such as saving, as relating solely to households.

c) Personal disposable income

Another frequently used aggregate is personal disposable income. This is the income available to persons after having met certain specific commitments. It is derived by deducting from total personal income, direct taxes, and other fees, licences and permit costs paid to government, including hospital and medical insurance premiums paid under publicly operated plans. Personal disposable income is equal to personal expenditure on goods and services and transfers to business and non-residents plus personal saving.

d) Final domestic demand

Final domestic demand, which appears in the income and expenditure accounts as a supplementary aggregate, measures personal expenditure on goods and services, government current expenditure on goods and services and business and government investment in fixed capital. It differs from the more widely used gross domestic product at market prices by omitting investment in inventories and exports of goods and services; it includes the import content of the measured components.

e) Gross national product

The most commonly used aggregate until the recent comprehensive revision was gross national product, usually referred to as GNP. Although greater emphasis is now given to the domestic concept, the national measure is still available. In the case of the expenditure based estimate, the net factor income adjustment can either be made explicitly at the aggregate level, or can be made to the export and import component of the account. The income based estimate of domestic product can either be adjusted explicitly at the total level or in the investment income component.

Definitions of the sectors

Transactions in the economy are organised and presented according to four broadly defined groups of transactors. In principle, the four sectors are defined so that the economic units assigned to each one exhibit similar patterns of behaviour, and the transactions between units in different sectors are analytically significant. Because the income and expenditure accounts are largely structured around the sectoring principle the definitions that follow are quite detailed.

The persons and unincorporated business sector displays the transactions of members of the community as final consumers. The government sector records the transactions reflecting the role of the non-commercial government operations as they relate to taxation and public expenditure. The corporate and government business enterprise sector, shows the transactions of those economic units organised to produce goods and services at a price calculated to cover costs and yield a profit. The non-resident sector displays the transactions of Canadian residents with the rest of the world and is different in character from the others. It is not organised on the principle of grouping homogeneous economic units but rather on residency and it includes transactions of persons, businesses and governments.

a) Persons and unincorporated business sector

Generally referred to as the personal sector, the full title 'persons and unincorporated business' indicates that the sector does not simply consist of individuals or households but extends much beyond.

First, the sector includes the entire net income of self-employed or unincorporated businesses because of data limitations. Ideally, this income should be split between income retained in the business and that withdrawn for purely personal use; for example, part of the income of self-employed farmers, retailers

and professional practitioners is withdrawn for personal living expenses and part is retained in the business for, say, reinvestment. This latter portion should more correctly remain in the business sector. So far it has not been statistically feasible to make this separation. A consequence of this is that personal saving contains a small element of saving by unincorporated businesses that would more appropriately be classified as undistributed business profits.

The capital finance account includes the major part of unincorporated business investment in fixed capital and capital consumption allowances. The inclusion of these major components of the operations of unincorporated business in the capital finance account is an unfortunate compromise forced on the system by data deficiencies. Because of statistical difficulties, inventory investment in non-farm goods by self-employed business proprietors is not included but remains in the business sector. Such blurring of the boundaries of the sector complicates the interpretation of the numbers.

Second, the sector includes private non-commercial institutions serving persons, such as labour unions, universities, religious institutions, charities, professional associations and social clubs. These institutions and groupings are included on the grounds that they are 'associations of individuals' acting collectively for the mutual benefit of individuals. The operating expenses of these groups (including the pay of their employees) are included in consumer expenditure. Their investment income and transfers from other sectors are included in personal sector income. Gifts and donations from other individuals are transfers within the sector and are excluded. The capital finance account includes capital spending by this group on such buildings as universities and churches.

Third, the sector includes certain transactions relating to life insurance and pension plans. The treatment of life insurance and trusteed pension plans is based on the consideration that funds held under these schemes are the collective property of individual policy holders and members of the pension plans; they are funds held on behalf of persons. This treatment affects several components of the personal sector.

Since income of the funds is considered to belong collectively to persons, the funds' income, other than premiums paid directly by persons, is added to personal income. This includes investment income and the premiums and contributions paid on behalf of persons by their employers.

As life insurance premium payments and contributions to pension plans add to the funds of the schemes, the payments by persons are not shown in full as personal expenditure. Only that part of the premium or contribution which covers the operating or administrative costs of the scheme is included as consumer expenditure, including an element of profit when the schemes are run by private companies. Operating costs are equated with the value of the service provided by life insurers or pension fund managers. In the case of life insurance the service charge for providing insurance is estimated to be the excess of premiums received over claims paid and net additions to the funds held. The income and outlay treatment outlined above has the effect of consolidating the saving of the life insurance and trusteed pension plans with individuals' saving. As previously noted, the saving is regarded as having been undertaken collectively by the schemes on behalf of persons.

Some interesting implications result from the above consolidations. In ignoring both premium and contribution outlays in excess of the cost of providing a service and benefits received by persons, important cash flows disappear from view. In the case of the premiums and contributions, the rationale is that part of the outlay is not consumer spending but saving; in the latter case, the benefits paid are considered a return of saving analagous to funds received from the sale of financial assets and are not income flows.

By contrast, the transactions of social insurance funds such as the Canada Pension Plan and non-trusteed government pension plans for its own employees are treated quite differently - they are regarded as being in the government sector. Contributions to and benefits from these schemes are shown as transfer payments flowing between the personal and government sectors. Investment income of the funds is credited to government saving. The conceptual reasons for the differing treatment are related to the contractual differences between government and trusteed schemes and the fact that one is unfunded and the other largely funded. The government treatment follows events in the real world more closely in the sense that it tracks the cash flows and recognizes that the saving is locked into the sector providing the service until certain rather rigid conditions are met. The argument advanced for the treatment accorded to private schemes is that pension and life insurance schemes are viewed as personal saving by individuals and that this perception is reflected in their behaviour and current consumption patterns.

b) The government sector

This sector covers a broad range of activities carried out directly by the various levels of government or their agencies. The essential characteristic of these activities is that they are non-commercial in nature. They are undertaken by society on a collective basis and financed for the most part out of taxation or government borrowing. Activities of government business enterprises operating for a profit are not included here; their methods of operation and motivation are considered more closely related to those of private business enterprises.

The government sector defined within the Canadian System of National Accounts covers three main groups of activities:-

i) the departments of the three levels of government - federal, provincial and local - ordinarily engaged in such activities as administration, defence, the regulation of public order, the promotion of economic development and the provision of health, education, cultural, recreational and other social and community services that are normally included in the budgetary statements of government;

ii) schemes administered by public authorities for purposes of providing social security services, such as the Canada and Quebec Pension Plans, workers' compensation and various pension plans and normally financed out of extra-budgetary funds; and,

iii) agencies, commissions, and boards financed from public funds and receiving most of their funds in the form of government grants, including for example, such bodies as the National Research Council, the National Film Board and the National Capital Commission at the federal level, health service commissions at the provincial level and school boards at the local level. The above include such major activities as the operation of all public hospitals and government administered medical health care plans.

In the process of preparing the overall sector account, transactions between the different levels of government are in general netted out according to the principle of omitting intra-sector transactions. A major exception to the consolidation principle is the treatment of interest payments on the public debt, which are shown on a combined basis for all three levels of government. Inter-governmental payments of interest appear as part of government expenditure and as part of investment income. Certain taxes on final expenditure levied by one level of government and paid by another are also shown as both payments and receipts by the sector. The treatment in the latter case puts the government sector on the same basis as the private sector in the sense that its expenditure at market prices includes indirect taxes. It also means that the sum of all sectors' final expenditure equals the total for the economy.

c) The corporate and government business enterprise sector

This sector covers privately controlled corporate enterprises together with government business enterprises. The enterprises included are responsible for the greater part of the country's production. It is important to recognize the distinction between the business sector as defined in the production accounts and the corporate and government business enterprise sector referred to in the income and outlay and capital finance accounts.

In the case of the production account both corporate and unincorporated businesses are included but in the income and outlay and capital finance accounts, because of statistical difficulties, the net income, saving and capital outlays of unincorporated businesses are included in the personal sector. The net income of an unincorporated business cannot be allocated accurately between the proprietor and the business; hence the entire amount is attributed to the personal sector.

The sector is defined in terms of the type of institution rather than activity. Corporations in the private sector are legal entities distinct from the persons who are their members; they are essentially organised to yield a profit and are owned and controlled by members of the private sector of the economy. In general, corporate entities have limited liability. The sector includes some private non-profit organisations serving corporations such as trade associations.

Government business enterprises share similar behavioural characteristics with private sector corporations, the main distinction being that of ownership and control. Although government business enterprises are owned and controlled by public authorities, they operate with a substantial degree of independence in the day-to-day conduct of their business and normally are organised to run as self-sustaining enterprises, in many cases yielding a profit. Government business units may be used to promote government policy objectives and in this event the yielding of gain by the enterprise may become of secondary importance. The enterprises are found in a wide range of activities through the industrial field.

Three aspects of the enterprise sector should be noted. First, all business enterprises resident in Canada organised as corporations are included in the sector, irrespective of whether they are owned or controlled by Canadians or by non-residents. Secondly, statistical deficiencies force the routing of large amounts of investment income related to interest on the public debt through the income and outlay account; the amounts routed in and out of the sector are the same and hence do not disturb the derived saving balance of the account but they do distort the aggregate income and outlay shown. Thirdly, a significant segment of the sector, covering banks and other financial institutions, require special treatment in the accounts.

Because users sometimes find the treatment of banks and other financial intermediaries confusing it is worth reiterating the description given in the input-output chapter. The conventional national accounting methodology yields a negative or unreasonably small positive estimate of income originating in the industry. Income originating in, or the value added by, an industry is normally estimated by summing payments to factors of production; interest payments which constitute one of the factor returns is included net of interest receipts.

The reason this procedure results in unreasonable estimates for the banks and financial intermediaries is that these institutions rely heavily on the interest they receive from the investment of clients' funds to finance the services they provide to clients. Thus,

they do not charge specifically for all services rendered to clients. By netting out interest receipts when deriving net income originating, and by not having a specific charge for services rendered when measuring net output from the product side of the account renders the traditional national accounting methodology unsatisfactory for this segment of the sector.

In order to overcome this problem an amount is imputed for the short-circuited transactions, that is, for the services rendered by financial intermediaries to their clients without charge. The amount of the imputation is taken to be equivalent to interest received less interest paid to lenders of funds to the institution.

d) The non-resident sector

The non-resident sector constitutes an important and integral part of the Canadian System of National Accounts. It differs in composition from the three sectors so far described. The personal, government and business sectors were groupings of units with some uniformity in behaviour and motivation, whereas the only binding link in the non-resident sector is the residency of the unit included. The sector includes all transactions of non-residents with Canadian residents.

The boundaries of the sector hinge on the determination of residency of individuals, government units, enterprises and international organisations. A general discussion of the question of residency appeared in the overview chapter in the section dealing with the national and domestic concept and will not be repeated. Further discussion of the residency concept appears in the chapter on balance of payments.

The non-resident sector does not fit happily into the conceptual framework developed for the domestic sectors. The income and outlay and capital finance accounts for domestic sectors record the distribution of types of income arising from production and any redistribution resulting from transfers, and the disposition of income on final goods and services both of a current and capital nature. In the case of the non-resident sector, the structure is that of an embryonic balance of payments statement. The income of non-residents is stated in terms of the value of Canadian imports of goods and services plus transfer payments by Canadians to non-residents and their outlay records Canadian exports of goods and services plus transfers to Canadians. For obvious reasons the account is not structured in terms of factor income receipts of non-residents, nor is there any offset to saving in terms of capital formation. The sector's accounts are, to a large extent, an expedient way of balancing the system.

Definitions of the main transaction categories

Income flows and other charges against production, as well as the major demand components of gross domestic product are defined in this section. In addition some important flows appearing in the sector tables will be described. As with transactors, the transactions are groupings which are both analytically significant and correspond as far as possible to important economic constructs.

A number of possibilities present themselves regarding the stage at which transactions are recorded. In practice the choice is usually between the cash payment and receipt basis, or the accrual (payable/receivable) basis. In the former the transaction is recorded when money passes, and in the latter, when an expenditure is made. In principle the Canadian accounts adopt the accrual basis for recording transactions, and to the extent possible, the principle is applied consistently.

The adoption of one method poses some difficulties insofar as data sources may use different methods; for example, most commercial accounting reflects the accrual basis, whilst government accounting is largely on a cash basis. Where known problems create serious data inconsistencies attempts are made to adjust data to the chosen basis. Since the different methods relate to the time at which transactions are recorded, the longer the period of account, the less likely the choice of method will produce greatly different results; the problems are likely to be more severe in quarterly than annual compilations. In the sector accounts where the emphasis is on income and expenditure distribution, as opposed to production measures, it is sometimes regarded as analytically more useful to examine the cash flows.

Income flows and other charges against production in the income based estimates of gross domestic product:-

a) Wages, salaries and supplementary labour income

Wages and salaries cover all earnings from employment of Canadian residents, including payments in kind such as free board and lodging. Also included are such payments as commissions, directors' fees, tips and bonuses, and taxable allowances such as cost-of-living allowances and payment in respect of vacation and sick leave. The estimates do not include earnings from self-employment or partnership, income from independent professional practice, or income of farmers from farming operations. Military pay and allowances are a component of wages, salaries and supplementary labour income.

Wages and salaries are estimated before tax deductions and before contributions of employees to unemployment insurance, pensions and other social insurance schemes. Bonuses, commissions and retroactive wage increases are included in the period in which they are paid because of the statistical difficulty of allocating them to the period in which they were earned.

Supplementary labour income consists of other expenditures by employers on labour account that can be regarded as payment for employees' services. Included here are employers' contributions to pension funds, employee welfare funds, unemployment insurance and workers' compensation.

b) Corporation profits before taxes

This component represents the net earnings from economic activity of privately-held corporations and is generally regarded as the share of these corporations in the gross domestic product, in other words, their factor income. Based on business accounting, profits require a number of adjustments to convert them to the needs of the economic accounts.

Corporation profits before taxes are measured after deducting an allowance for the consumption of fixed capital in the current period. Conceptually, the allowance would best be based on the replacement cost of capital but, being derived from business accounts, it is normally based on the original cost. The original cost allowance is accepted partly because of statistical difficulties in estimating replacement cost valuations and partly from a desire not to depart too far from the business accounting concept of profits.

Depletion allowances are not charged against profits in the national accounts. In business accounting, discoveries of new natural resources are capitalized and their exhaustion is regarded as a production cost. In the national accounts they are not included as part of the stock of wealth and no cost of depleting them is made against profits; hence economic profits are higher. In the case of geological and geophysical survey costs, capitalized by business but considered current expenses in the national accounts, economic profits are lower than recorded business profits. Mining and exploration costs involving the acquisition of tangible durable equipment and construction or drilling, which may be treated as current charges against profits by business, are considered capital formation in the economic accounts; in this case economic profits are higher than business accounting records.

Corporation profits include gains and losses arising from the effect of price changes on inventory values. National accounting concepts rule that these gains and losses do not arise as a result of current economic production and should not be permitted to influence profits. In the Canadian accounts the adjustment is not made directly to profits but a separate inventory valuation adjustment series is published. Users may then analyse the economic construct of profits by making the adjustment themselves, or they may use the alternative business accounting concept. Corporation profits before taxes also exclude other forms of capital gains and losses as these do not represent factor incomes arising from current production.

The payment of dividends is considered to be a distribution of profits in the economic accounts and so the published series of profits is before dividend payments. It is important therefore to exclude from profits those dividends received by Canadian corporations from other Canadian corporations when summing business accounting records of profits.

Other adjustments required to fit business profits into the mold of the economic accounts include the adding back of some items considered as expenses by business but as distribution of profits by economists. These include certain taxes, bad debts owed by persons and written off, and charitable contributions.

c) Interest and miscellaneous investment income

This component measures interest income of persons and government investment income before deduction of direct taxes. Being on a domestic basis the total includes interest earned in Canada payable to non-residents, but excludes that due to Canadian residents from their activities outside the country.

The main items in the category are Canadian bond and mortgage interest; paid and imputed interest on deposits with chartered banks and similar financial institutions; and investment income received on behalf of persons by insurance companies, trusteed pension funds, fraternal and mutual benefit societies, arising from a diverse range of financial instruments. Items of less significance are royalties received by persons, interest credited to persons from federal government annuities accounts, and the profits and interest of mutual non-life insurance companies.

Government investment income includes the profits of government business enterprises, royalties, interest on government loans and advances, interest on publicly held funds such as government pension and social insurance funds and imputed interest.

A major adjustment is made to the interest and miscellaneous investment income component on account of interest on the public debt and on consumer debt.

Interest on the public debt is excluded from the interest component of domestic income since it is regarded as a transfer, or distribution of income, rather than a factor income arising from a productive service. For statistical reasons, the full amount of interest on the public debt is deducted from total interest income received by persons. To the extent that business and government are holders of public debt, part of the deduction should apply to these sectors and corporation profits and government investment income should be lower and investment income of persons higher.

Part of interest on consumer debt is also treated as a transfer payment and is excluded from national income by an explicit deduction in the interest and miscellaneous investment income component. The reason for this exclusion is that consumer outlays are considered to be current expenditures with the exception of housing. Since consumer goods cannot give rise to investment income, it is necessary to exclude interest on the debt which finances such goods. Administrative expenses which are incurred in rendering services to borrowers are, however, included in personal expenditure and gross domestic product.

d) Accrued net income of farm operators from farm production

This component includes the sales of farm products, plus the imputed value of farm output consumed by the farm family, plus the value of the physical change in farm inventories, less farm operating expenses and capital consumption allowances on farm buildings and equipment. Income not derived from farming activities is excluded, as are transfer payments.

e) Net income of non-farm unincorporated business including rent

This item consists of the earnings of working proprietors from their own businesses and also includes the net income of independent professional practitioners such as doctors, lawyers, dentists and engineers.

Net rental income of persons covers net rents (either paid or imputed) received from ownership of residential property and net paid rents from the ownership of non-residential property. Net rent is equivalent to gross rent less landlord expenses such as heating, property taxes, capital consumption allowances, mortgage interest, insurance and repairs.

f) Inventory valuation adjustment

Because business accounting records generally incorporate inventories in the production process on the basis of their historical cost, the change in the book value of inventories and the profits reflected in business books may include an element due to price changes. If prices have risen or fallen between the time that inventories were acquired and the current period when they are used up and replaced, both inventory change and profits will contain an element of capital gain or loss which is not related to the measurement of current production.

In the economic accounts, this element is removed and the change in inventories is valued at current prices of the period. The adjustment to inventory investment carried out on the expenditure side of the accounts requires a counterpart entry on the income side, so that a profit figure maybe derived using the same method of inventory valuation.

g) Indirect taxes and subsidies

Indirect taxes represent a part of the market price of goods and services and must be added to domestic income at factor cost to arrive at a market price valuation. Indirect taxes are normally distinguished from direct taxes on the basis that the former are imposed on expenditures as opposed to incomes. Among the major taxes included in the Canadian accounts as indirect are sales and excise taxes, import duties and property taxes. Taxes on income, or direct taxes, are already included in market prices by virtue of the fact that factor incomes are gross of direct tax payments.

Subsidies represent amounts contributed by governments toward current costs of production. In this sense they may be regarded as negative taxes which reduce market prices below factor costs. For this reason subsidies are deducted from the total of factor costs to arrive at gross domestic product at market prices.

h) Capital consumption allowances

The gross aggregates in the Canadian System of National Accounts measure production and income before allowances for the using up of capital in the production process. However, as such a charge against production is embodied in the market price of commodities in the expenditure based estimates, a specific allowance must be included on the income side of the accounts to maintain the conceptual balance. In business accounting the provision for the depreciation of capital is usually based on the historical cost of the asset and on an assumed length of life.

Conceptually, in economic accounting, the valuation of capital consumed is more appropriately based on its replacement cost in accordance with the current price valuation principle. For example, in periods of rising prices, business accounting methods will understate the cost of capital consumed in current prices but overstate profits which is a residual after deducting other expenses from revenues. The effect of the overstatement may be offset to some extent by the fact that business may, for tax purposes, depreciate an asset over a shorter length of life than its actual life-span.

In the Canadian accounts, the estimates of capital consumption allowances area mixture of historical and replacement cost bases. In areas where business records are generally not available, capital cost allowances are estimated at replacement cost - for example, on housing, fishing fleets and equipment, agricultural plant and equipment, and government fixed investment. In all other areas historical cost estimates from business accounting records are used. No matter which method is employed in the business sector the gross measure of production does not vary, but the choice of method is reflected in the net measure of production as different capital consumption allowances affect the level of profits.

For many analytical purposes, business accounting records of depreciation have become less relevant given the rapid price changes experienced in the past decade, a fact recognized by both business and national accountants. There has been much study and many new recommendations in this area over the same period. Two difficulties are prominent in switching to replacement valuation. One relates to the impact of quality and technological change and how to take these into account in the context of the replacement cost of existing assets, and the other to determining the service lives of assets and the manner in which costs should be allocated over these lives. These are not problems new to estimating capital consumption, but they are important issues that have to be addressed when considering any changes in this area.

Two miscellaneous balancing adjustments required to close off the income based estimate of gross domestic product are included in this component. The first relates to items not considered as capital in the national accounts but charged to capital by business. Because this treatment leads to higher business net income, a negative adjustment is required to keep the income and expenditure based gross domestic product estimates in balance. Items charged to capital by business but not considered as capital in the national accounts do not appear on the expenditure side of the accounts, thus the income based estimate would be too high without this adjustment.

The second adjustment relates to business and residential insurance claims paid to compensate for fire and other type of losses. These claims, a form of capital consumption, together with the factor incomes generated by the insurance service, constitute the income based counterpart to the premiums paid by business which enter into the market prices of the expenditure based estimate.

Demand components of the expenditure based estimates of gross domestic product:-

a) Personal expenditure on consumer goods and services

Personal expenditure on consumer goods and services includes outlays on all new durable, semi-durable, and non-durable goods and services except purchases of dwelling units. Intra-sectoral purchases of used goods are excluded and only an estimate of dealers' margins and commissions on used goods are included as representing expenditure on current production. However, purchases of used imports and capital items from the business sector, for example automobiles, are included.

The inclusion of imputations for free board and lodging and other income-in-kind in the estimates is as if persons had received income and had specifically purchased goods and services of equivalent value. Purchases of dwelling units are not included as current expenditures but appear under fixed investment as if the purchasers were businesses. This capitalisation of dwellings requires that personal expenditure include an imputed rent estimate paid by owner-occupiers to themselves for the service yielded by the dwelling.

The estimate also includes outlays by those, other than individuals and households, who are part of the personal sector, such as the operating costs of non-commercial institutions serving persons, and the operating costs plus profits of life insurance companies.

Spending by Canadian residents temporarily abroad, either as tourists or as members of the armed forces, is included as part of personal expenditure, while expenditure by foreign residents temporarily in Canada is excluded. All expenditures that are regarded as business costs are excluded.

b) Government current expenditure on goods and services

This component consists of current outlays for goods and services of the federal, provincial and local governments, including locally administered elementary and secondary school systems and government administered hospital care services. It does not include government purchases on capital account (investment in fixed capital and inventory change), nor the activities of government business enterprises. The outlays cover all general operating expenses of government departments and agencies, including wages and salaries, office supplies and repair and maintenance costs, plus an imputed allowance for the consumption of government fixed capital.

The expense of providing goods and services sold to the public are excluded from government expenditure as outlays for these commodities show up in the expenditure of other sectors. Expenditures for military equipment and defence installations are not capitalised but appear as current outlays.

This final demand component covers only government current purchases of final goods and services and should not be confused with total government outlays. A larger part of government spending takes the form of transfer payments and is recorded in the sector accounts under such items as social security payments, interest on the public debt, subsidies to producers and other transfers.

c) Investment in fixed capital

Business and government investment in fixed capital is defined in broad terms to include the production of physical productive assets that yield a service in the future, examples of which include factories, dwelling units and machinery. It is the major component of production which adds to the nation's wealth. Looked at another way, it is that part of final expenditure not consumed, exported or added to inventories during the accounting period.

Operationally, investment in fixed capital covers outlays on new durable tangible assets with a life-time use of one year or more. Outlays on used buildings and machinery, except for related fees and commissions, are excluded since such goods are not part of the nation's production in the period of account. Imports of used capital machinery and equipment are included in the estimate as adding to the stock of capital of the nation, but do not affect the overall measure of production as they are also a part of the negative import adjustment.

The estimates include capital costs associated with the development of natural resources but not outlays for land, mineral deposits and timber tracts themselves; the former expenses are attributable to productive activity but not the latter. Alterations and improvements to existing stock which extend the life of the asset beyond that originally anticipated are treated as fixed capital, but regular repair and maintenance expenses are not. Costs associated

with the purchase of fixed assets such as architectural, engineering, legal and landscaping fees and expenses are included in the estimate. The estimates are gross in the sense that no deduction is made for the consumption of the existing stock of capital in the production process during the period of account - the gross concept is useful to the extent that replacement of worn-out or obsolete capital assets can, within limits, be postponed.

Three sub-components of fixed capital are provided - residential construction, non-residential construction and machinery and equipment and these estimates are further subdivided between government and business. The government estimates exclude capital outlays by government-owned enterprises, which are included in the business sector, and military installation and equipment which are considered current outlays.

Business residential construction estimates cover both commercial and owner-occupied type housing, ranging from single dwelling units through to major apartment complexes, including ancillary structures such as garages, sunrooms and other major additions and alterations. Business investment in non-residential construction and machinery and equipment covers investment in all forms of productive assets by business - corporations, unincorporated business and government business enterprises - and by non-commercial institutions - churches, universities and charitable and welfare agencies.

The Canadian income and expenditure accounts do not include consumer durable goods as investment even though many meet the criteria of durability, tangibility and reproducibility. This decision is of importance in the Canadian context because the balance sheet accounts do consider certain consumer goods as fixed assets; the matter is discussed more fully in the final chapter.

d) Inventories

The change in holdings of business and government inventories represents that portion of current production which has not yet been sold, or that portion of previous years' production which is included in sales of the current year. In the former case there is inventory investment and in the latter disinvestment. The value embodied in the accounts should represent the physical quantity of the change times relevant average prices during the period of account. Inventories fall into three categories: stocks of raw materials and fuels waiting to be fed into the productive process, stocks of work-in-progress or partly finished goods already in the production stream, and stocks of finished goods waiting to be sold.

Many business accounting methods yield book values of inventory deemed unsuitable for the income and expenditure accounts. In times of rising prices changes in recorded business inventory book values will frequently include an element of capital gain which simply reflects the fact that beginning-of-period inventories and withdrawals have been recorded at original cost, while purchases and end-of-period inventories are recorded at a higher price. A valuation adjustment is thus made to lower the book value change in inventories - the same adjustment is explicitly shown in the income based estimates to maintain the balance between the two sides of the account. When prices are falling the reverse situation holds true. The calculation to derive the inventory valuation adjustment is complex and involves knowledge or assumptions about the commodity content of the stocks, the business accounting methods used in arriving at book value of stocks and the availability of price indices which match inventory content.

There are certain types of inventory specifically excluded from the measurement of the change in inventories in the production account. Changes in stocks that are due to natural process rather than economic activity are excluded, such as the discovery of mineral reserves and growing forests. Inventories held by consumers for future consumption are excluded because these have already been included in the estimate of personal expenditure.

In general, construction projects and certain machinery and equipment, the manufacture of which extends over a long period and for which progress payments are made, are recorded as fixed investment in capital at the time progress payments are made rather than as stocks of goods-in-process.

e) Exports and imports of goods and services

Exports of goods and services are final sales by the domestic economy and must be included in an accounting of final production. Conversely, because final domestic demand generated by persons, government and business includes goods and services not produced in Canada, the value of imports of such goods and services must be subtracted in estimating domestic production. Trade in goods takes place when the ownership of merchandise passes between residents and non-residents and in services when the service is rendered.

Exports and imports of goods and services constitute the only international transactions embodied in the measure of gross domestic production but other international transactions also have an impact on parts of the income and expenditure accounts. Investment income and transfers between residents and non-residents are important flows affecting individual sector incomes and outlays and in differentiating domestic and national aggregates.

The total of all international transactions recorded in the income and expenditure accounts is directly linked to the major flows shown in the Canadian balance of international payments estimates. The detailed statements appearing in the balance of payments are condensed into transactions in goods, services, investment income flows, and transfer payments and receipts for use in the income and expenditure accounts.

Net exports of goods and services (exports less imports), plus net investment income and net transfers is equal to the current account balance in the balance of payments statement; when positive this balance is an element in increasing the net wealth of the nation.

Transactions specific to individual sector accounts

Transactions in the sector accounts are composed of three principal elements: the initial distribution of earnings attributable to productive activity, there distribution of that income in the form of transfers, and the allocation of final spending on goods and services produced. Two balancing items fall out of the sector income and outlay and capital finance accounts respectively. The first residual is the difference between current income and expenditure, a saving or dissaving figure, and the second the difference between saving and capital accumulation, a lending or borrowing estimate.

The income and expenditure transactions correspond with those explained in the context of the gross domestic product measure and need no further description. Of the other transactions, transfer payments were discussed in the section on 'Extending the statistical analysis of the economy' and it remains only to discuss the saving and lending aggregates appearing in each of the sector accounts. Saving is that part of the sector's income, both earned and received as transfers, not spent on current consumption or paid out in the form of transfers. The net saving total recorded in the income/outlay account for each sector is carried forward to the capital finance account. It is possible for sectors to spend more than their current income, in which case net saving becomes negative.

The capital finance account shows, in addition to net saving, the total of capital consumption allowances and capital transfers received. It sets off against this estimate of gross saving, spending on fixed assets, inventory change and any outlays of a capital transfer nature. A positive balance signifies lending and a negative one indicates borrowing by a sector. Lending and borrowing are translated into financial claims in the financial flows branch of the System of National Accounts. Conceptually, the sum of lending less borrowing of the domestic sectors of the Canadian economy equals the net acquisition of financial claims on non-residents. The same total may be arrived at by subtracting the value of the domestic sectors' capital formation, including inventory change, from gross saving by the domestic sectors.

The size of a sector's saving and financial surplus or deficit is not only the result of income and expenditure patterns but also the conventions defining the sector. For example, in the personal sector, because of statistical difficulties, certain flows attributable to unincorporated business are included, thus raising the level of saving.

The Canadian sector accounts have had to deviate from the ideal conceptual treatment in certain instances because of statistical deficiencies. The major departure occurs in the income and outlay account of the corporate and government business enterprise sector. Instead of simply showing profits and current transfers from other sectors as income, net interest originating in the business sector and interest on the public debt are routed into the sector income and outlay account as income flows. In turn these amounts appear as outlays in the account along with dividend payments and tax transfers. This routing of flows through the account that do not properly belong there does not affect the sector's saving estimate as both sides of the account are inflated. However, it distorts the absolute levels of income and outlay for the sector.

A less significant deviation is the inclusion of intergovernmental payments of interest on the public debt which appear in the income and outlay account of the government sector. These payments and receipts would normally be netted out in the consolidation procedure but it has been deemed useful to show the gross level of interest payments in the case of the public debt. This treatment has no impact on the surplus or deficit figure for the government sector as the same entry appears on both sides of the account.

Other features of the income and expenditure accounts

a) Constant price estimates

The income and expenditure accounts and the input-output tables both include constant price estimates of expenditure on gross domestic production. The reasons for producing constant price series and the problems posed in the deflation process were discussed in the input-output chapter. It noted the importance of being able to analyse 'real' changes in production, the significance of selecting the most appropriate index and base year and the difficulty of distinguishing between price and quality change. Two are as presenting unique problems were also noted, those services having no market price and non-standard products for which there are no price indices.

The constant price estimates in the income and expenditure accounts provide a second and independent estimate of expenditure based GDP, arrived at by deflating at a different level of detail and stage of pricing. About 300series valued at final market or purchaser prices are deflated. The deflation is undertaken at a more detailed level than appears in the published tables because this improves the accuracy of the estimates. The more detail, the greater the possibility of more precise price index matching and the less likelihood of price dispersion within a single component.

The major difference between the deflation undertaken in the income and expenditure accounts and the input-output tables is the point of pricing. The income and expenditure accounts components are deflated at the final point of sale, or purchase price, in contrast to deflation in the input-output system at the producer price stage with subsequent margins covering transportation, trading and taxes being separately deflated. Theoretically the estimates should be identical but because of different methodologies the major aggregates differ slightly -

their closeness, however, reinforces confidence in both sets of estimates.

The input-output and income and expenditure systems both include constant price estimates of the exports and imports of goods and services. Such estimates do not appear in the balance of payments system of accounts because in practical terms the balancing nature of the system's current and capital account cannot be reproduced in constant prices. The linkage of production and financial data in constant prices remains an elusive concept.

b) Income and product by industry

The main orientation of the income and expenditure accounts is towards institutional sectoring. However, since their development preceded that of most of the other branches of the system, pressures developed for some disaggregation of the overall gross domestic product estimates along industrial lines. Selected components for fifteen main industries are prepared and published, including wages, salaries and supplementary labour income, profits and other investment income, and net income of unincorporated business. In addition, industrial distributions of two of the principal components of the expenditure based estimates, investment in fixed capital and the value of physical change in inventories, are prepared.

The preferred unit of classification for industrial statistics is usually the establishment. In the case of the income and expenditure accounts there is some deviation from this principle due to data availability. Both profits and capital consumption allowances are examples of important series available only on a company basis, and it is on this basis that they are allocated industrially. The use of the company as opposed to the establishment as the unit of classification provides a less pure form of industrial distribution. Because multi-establishment companies may be engaged in a wide range of activities, the attribution of, say, profits to the industry in which the company has its single most important activity may well distort the true industrial origin of profits.

Interest payments are considered to constitute part of the value added by, or income originating in, the industry using the capital rather than the lending industry. In order to avoid double counting, interest received from other industries is deducted from interest paid, so that only net interest paid is included in any industrial distribution of income originating.

c) Income and product by region

The accounts have long provided provincial and territorial estimates of personal income, personal disposable income and their principal components. Generally, the allocation of personal income on a geographic basis has not presented major conceptual problems. By adopting the domestic concept for the income measure, incomes earned within provincial or territorial boundaries are ascribed to that region regardless of the residence of the owner of the factor of production.

In more recent years the scope of regional data within the income and expenditure framework has been extended. Since the late seventies, income and expenditure based estimates of provincial gross domestic product have been prepared as an integral part of the accounts, with the provincial estimates adding to the national total. As with the Canadian totals, the provincial product income-based estimates sum the incomes received by the factors of production - labour income, corporation profits, farm income, capital consumption allowances, and so on. The expenditure estimates sum all sales to final consumers - persons, governments, businesses on capital account and net exports. The full range of sector tables has not been developed but government revenue and expenditure accounts showing current and capital transactions by different levels of government are available.

The preparation of regional accounts poses problems of concept and data availability that do not exist at the Canada level. These problems are aired more fully in reports on the provincial economic accounts, but briefly, they include:-

i) the distribution of corporation profits among provinces where they are earned in multi-establishment, multi-province corporations - the solution in the Canadian system is to allocate profit on the basis of operating surplus, sales or labour income to the area where activities are taking place rather than head office;

ii) the regional allocation of indirect taxes levied and subsidies paid by the federal government - the problem is resolved in the Canadian accounts by assigning them to the province according to the location of production;

iii) the most appropriate regional allocation of mobile capital investment such as aircraft and railway rolling stock - in the Canadian accounts the allocations are based rather arbitrarily on such data as transport industry employment and freight loading statistics;

iv) the residency of the federal government is an issue of some consequence in the allocation of government expenditure by province -whether it should be regarded as expenditure on provincial production by a resident of the province or by an external sector. The Canadian system regards it as expenditure by a resident of the province, a treatment consistent with multi-provincial corporations in which the income is attributed to the province in which the activity takes place rather than the province of the head office.

A problem of major significance in the provincial accounts is the accurate measurement of transactions in goods and services between a province and the rest of the world, including other provinces. This estimate is the weakest link in the accounts. With no direct estimate of provincial imports and exports available, net exports are derived as the balancing

item in the identity income-based equals expenditure-based provincial gross domestic product. This residual estimate not only covers net external flows but also non-offsetting errors which exist on both sides of the account.

d) Government supplementary information

The income and expenditure accounts provide much supplementary data on the operations of government that are consistent with the concepts and definitions employed in the sector account. A comprehensive picture of the types of revenue, expenditure, saving and financial investment by the various levels of government, hospitals and Canada and Quebec Pension Plans is given. Further detail is provided on the direct and indirect taxes levied on persons and corporations by different levels of government, the source of government investment income and the programmes under which transfer payments are made to persons, to business and to other levels of government.

e) Quarterly seasonally adjusted estimates of GDP

The availability of quarterly seasonally adjusted GDP estimates has added significantly to the analytical usefulness of the accounts. Although the full range of tables are not prepared quarterly, the core current price tables and the constant price expenditure estimates, along with tables concerning the four institutional sectors are available. The quarterly accounts are conceptually and definitionally consistent with the annual accounts. In order to achieve the vastly improved timeliness of the quarterly estimates, different data sources and methodology are frequently employed, resulting in some trade-off in accuracy for timeliness. Quarterly estimates are revised as firmer data become available.

The purpose of the seasonal adjustment process is to uncover the underlying changes occurring in the main components of the accounts by smoothing out repetitive intra-annual fluctuations. Examples of such movements include the peaking of agricultural production in the summer months and of consumer expenditure prior to Christmas. In the latter case the technique does not eliminate any consumer expenditure, but simply redistributes the normal fourth quarter peak between other quarters, so that it becomes possible to observe the underlying trend through the third and fourth quarter without it being obscured by the normal Christmas uplift.

The analysis of economic events is nowadays predominately undertaken in terms of seasonally adjusted series, so much so that the Canadian system of income and expenditure accounts published quarterly report no longer contains unadjusted estimates, although they are available upon request.

Uses of the income and expenditure accounts

If the extent to which it is used measures the value of a set of statistics, the income and expenditure accounts are almost certainly the most treasured series in the Canadian System of National Accounts. The uses fall into three main categories: analysis, projection and forecasting, and policy formulation.

In analytical uses the purpose is usually to discover key variables and relationships suggested by theory, or suggestive of theory - the time series in the various tables of the income and expenditure accounts provide the data base for an unusual amount of exploratory activity in this field. The aggregates or components of the income and expenditure accounts are also used extensively in the field of forecasting, or as background to assist in projecting other series; the forecasts are based on patterns of past behaviour and assumptions about current and future developments.

Policy formulation and decision making in the context of the income and expenditure accounts usually follows the analysis and forecasting stage and assesses the implications of policy changes in the light of national accounts estimates. In the business field the estimates are likely to impact on policy decisions (marketing strategies based on consumer spending), whereas in government the policy decisions are likely to impact on the estimates (agricultural subsidies impact on farm income).

Examples of uses of the accounts abound in the business, union, academic and government fields. The most widespread use is simply as background information, indicating the general business climate; in this context the data appear in speeches, company reports and as supporting material in relation to company or government programmes.

Analyses of the structure and growth of the economy within the framework of the accounts appear in economic textbooks, studies by agencies such as the Economic Council of Canada, private research institutes, consultants, and Royal Commissions concerned with the economic prospects of Canada. Structural analyses focus upon such aspects of the economy as the composition of major demand categories, the industrial or regional distribution of production, the income shares of major factors of production, the role of government, and the financing of capital formation.

The economy has been explored and modelled in terms of the accounts by both private and public institutions in attempts to gain a better understanding of economic relationships and the impact of changing economic conditions. In labour negotiations the accounts are frequently employed to contribute toward an understanding of productivity and the relative share of factor incomes.

Short and long range projections of the growth of the Canadian economy, cast in terms of the income and expenditure accounts, figure prominently in business journals and reports dealing with predictions of conditions of employment, stock market fluctuations, prices, interest rate changes, sales targets and capital spending plans.

A projection or forecast of the trend in the overall economic climate is frequently used as the starting point

for specific industry and company predictions and targets. Forecasts of Canadian economic performance are also used by international agencies where the prospects of the major industrial countries are appraised and evaluated regularly with the aim of promoting the co-ordination of national economic policies. Forecasts are regularly prepared by governments as a preliminary step in the preparation of their budgets; it is customary for most governments to estimate their revenues and assess their spending programmes against the background of the income and expenditure accounts.

Economic policy formulation and business decision making frequently evolve from analysis and forecasting done within the framework of the accounts. Examples of this are the development of tax policies that are determined by the predicted growth and distribution of corporate profits and personal incomes and by estimated tax yields, and the development of production goals and sales strategies of major enterprises that are based on predictions of personal disposable income and consumer demand.

In addition to the above, the income and expenditure measures may be used as an administrative tool as in the case of tax sharing arrangements between the federal government and the provinces, and in the determination of Canada's contribution to international agencies. Extensive use is made of the accounts in the educational system at the higher levels, particularly in economic and related business courses, where they are used to promote an understanding of the Canadian economy and to illustrate macroeconomic theory.

A more limited technical use of the accounts, but nevertheless a highly important one, is their role in evaluating and planning the programmes of statistical agencies. Because of their comprehensive nature and the balancing characteristics built into the framework, the accounts provide an ideal vehicle for revealing gaps and weaknesses in the statistical data base and for forcing a more rigorous approach to the development of classification systems. This particular use is not limited to the income and expenditure accounts but applies to all components of the system.

Links and reconciliation with financial flows

A description of the link between the income and expenditure accounts and the input-output tables has already been given in the final section of Chapter 3. This section deals with the relationship between the income and expenditure accounts and the financial flows branch of the system. How the income and expenditure accounts are related to the current account of the balance of payments will be described in the chapter on balance of payments.

The overlap between the income and expenditure and financial flows systems occurs with the measurement of saving and investment. The income and expenditure system contains capital finance accounts which record gross saving, capital formation and net financial investment, representing the final distribution of the proceeds derived from current productive activity after taking account of current consumption. The financial flow system also contains estimates broadly similar to saving and investment in non-financial and financial assets, but moves beyond these flows to record the financial transactions that underlie the net financial investment figure common to both systems.

As noted above, the single point of overlap is the net financial investment of each sector. In the income and expenditure accounts it represents lending by a sector with saving in excess of its capital formation, or borrowing by a sector with saving insufficient to finance its capital spending. In the financial flow accounts it represents the net result of transactions in financial assets and liabilities by any sector.

Estimates of net financial investment derived from either the income and expenditure accounts or the financial accounts is theoretically identical. If a sector's saving exceeds its investment in non-financial capital, the balance must be reflected in a net increase in financial assets. The reverse is true for sectors spending more than they save; in this case there must be a net decrease in their financial assets, usually as a result of an increase in financial liabilities.

In both sets of accounts, lending and borrowing or net financial investment summed across all sectors equals zero. The lending of one sector is offset by the borrowing of another, or put differently, the net acquisition of financial assets is offset by the net issuance of liabilities.

The income and expenditure system closes at the point where the amount of lending and borrowing necessary to balance the supply and disposition of production is shown. The financial flows pick up at this point and show the form of financial instrument used to accomplish this transfer of funds from lenders to borrowers.

Net financial investment can be determined independently from either system of accounts and as might be suspected is determined itself by the interaction of variables from both the production and financial markets.

The integration of the two branches of the Canadian System of National Accounts has been accomplished in the sense that the definitions of transactions are, to the extent possible, compatible; sector boundaries are the same at the level of aggregation used in the income and expenditure accounts; and the aggregates from the capital finance accounts are used as benchmark data in the financial flows system for saving and investment.

The extent to which the two systems are truly integrated and reconcilable requires some further exploration and examination. The fact that the independently derived estimates of net financial investment at the sector level show significant differences raises the question of to what extent they reflect discrepancies attributable to statistical shortcomings or uncovered conceptual and definitional problems.

At the conceptual level it is not clear that all the adjustments necessary to fully integrate the non-financial and the financial sets of statistics are in place. Although both sets stem from business accounting type records, a

number of adjustments are made to both the non-financial and the financial series. The income and expenditure transactions are conceptually on an accrual basis, while the financial flows are recorded at the time payments are made. Although some timing adjustments are made to the financial data to make it consistent with the accrual-based production data, for example, in the case of government and chartered banks interest flows, more timing adjustments of this type may still be required.

The financial flow accounts also include estimates for the net purchase of existing assets on a sector by sector basis, whereas such transfers are not recorded separately in the income and expenditure capital finance accounts with the exception of net inheritances and migrants funds'. This difference in treatment creates statistical differences at the sector level in the estimates of lending/borrowing.

Part of the reconciliation problem is the result of statistical short comings in the different source data used in the two sets of accounts. In the income and expenditure accounts, for example, lending of persons and unincorporated business is derived residually as the difference between their income and spending and hence contains the errors of these aggregates. In the financial flow accounts, lending, or its equivalent net financial investment, contains the errors embodied in the asset and liability estimates.

The fact that the statistical discrepancy item in the income and expenditure accounts is carried into the financial flow accounts with no attempt to allocate it by sector ensures that, if all else were correct, there would be sector discrepancies that would only net out at the aggregate level.

Despite the progress made, the above indicates the complexity of there conciliation process and the fact that there are still areas where further work may yield improvements.

Chapter 5

Financial Flows and Balance Sheets

I - Financial flows

General

The financial flow accounts stem from development work done for the Royal Commission on Canadian Economic Prospects in 1959, and published in W.C.Hood's 'Financing Economic Activity in Canada'. The years covered by the prototype financial flows were 1946-1954 and they were known as the national transactions accounts. Statistics Canada first published financial flows in their present form in 1969, commencing with the year 1962. Since their inception the accounts have been available on a quarterly basis. In addition, year-end levels of outstanding financial assets and liabilities are available for the year 1961 forward. In 1985 these partial balance sheets, which excluded non-financial assets and net worth estimates, were superseded by national balance sheet accounts which are described in the latter half of this chapter.

The financial accounts provide a framework within which financial transactions of institutional sectors of the economy may be examined and related to the non-financial set of accounts, particularly the capital finance account and saving and investment. The flow accounts record transactions in financial assets and liabilities, an increase in the financial assets of one economic unit being offset by a decrease in the assets or an increase in the liabilities of another.

The value of transactions in financial assets and liabilities for a single sector are unlikely to be in balance. An increase in financial assets in excess of liabilities indicates the sector has been a net lender, whereas a more rapid increase in liabilities reflects net borrowing. Lending and borrowing between resident sectors is offsetting, so that to the extent that the financial assets of all resident sectors exceed their liabilities Canadians are lending to non-residents. To the extent that liabilities are greater than financial assets Canadian residents are borrowing from non-residents. It follows that in the financial accounts financial assets and liabilities for domestic sectors plus non-residents are equal and offsetting.

The financial flows are frequently described as a direct extension of the income and expenditure accounts. Both sets of accounts independently derive estimates of sector lending and borrowing, but for the income and expenditure system it is the closing point of the system, while for the financial flows it is the opening statement. It is true that the financial accounts can be viewed principally as a statement of how funds are transmitted from those sectors having surpluses or saving to those whose capital programmes exceed their saving. However, this limited perception of the accounts is likely to encourage the mistaken notion that the recorded financial activity is solely associated with borrowing funds to finance new capital formation. The net result of financial transactions by sectors does indeed provide this perspective; however, the accounts record much more.

It is the additional information that complicates the analysis of the accounts and makes difficult a link with existing economic theory. The combination of transactions related to financing current production, transfers of past production and the redistribution of existing financial claims, all within a single framework, presents a formidable analytical challenge touching as it does on a number of different economic theories. Compilers of the accounts have had to face the dilemma of constructing a system which is sufficiently condensed for easy use within the framework of the System of National Accounts, but at the same time is detailed enough to reveal the broader role of financing in the Canadian economy.

Before setting out the framework of the Canadian system, it may be helpful to indicate the underlying motivations for many of the transactions recorded in the financial accounts. Not only will it alert readers to the complex nature of the accounts but it will also be obvious that some transactions would take place even if the flows system were uncoupled from productive activity and no net lending or borrowing activity between sectors was taking place. The transactions recorded in the accounts reflect a combination of the following factors:

i) financing new capital formation,

ii) financing transactions in existing non-financial assets

iii) financing current production

iv) financing current consumption

v) portfolio adjustments

The extent of these activities is a function of the level of development of financial markets in a country; the more sophisticated the financial markets of a country, the greater the scale of financial intermediation.

Of the five factors noted above, three are related to the production process, whilst two record the financing of transfers of existing assets. Examples of the production oriented transactions include trade credit, consumer automobile financing and new residential mortgage financing, while redistributional-type financing includes bond issues to support a corporate merger or take-over or bank lending to support investment in existing shares. It will be apparent to the reader that two of the difficulties confronting the user of the flows is that different types of motivational behaviour may be present in a single category of financial transaction, for example, a mortgage may finance new housing or refinance existing dwellings. Secondly, the purpose of a transaction is different when viewed from the perspective of the lender and the borrower.

The financial flow accounts' aggregates are also heavily dependent on the degree of netting adopted in the compilation of the numbers. It is possible to present the data on three bases: in their most net form, with individual categories of liabilities netted against assets; with assets on a net basis (increases less decreases) and liabilities on a net basis; and in the greatest detail with increases and decreases in both assets and liabilities shown separately. The ability to interpret the numbers depends considerably on the choice of presentation, which in turn hinges to a large extent on data availability. The Canadian accounts are presented on the second basis but the most net form can easily be derived.

A final point concerns the extent to which transactions for any sector are presented on the basis of consolidated or combined accounting methods. Transactions between units within a sector are netted out on a consolidated basis, whereas on a combined basis the transactions of each unit are summed regardless of whether the transaction is intra- or intersectoral. The absolute measure of activity will vary depending on the choice of presentation.

The above general observations on the nature of the financial flow accounts are intended to alert the reader to the facts that they do not fit a theoretical model in the fashion of the income and expenditure accounts, that although the system has built-in constraints and balances, there is no single conventionally accepted aggregate towards which it builds, such as the gross domestic product, and that choices concerning the degree of netting, sectoring and consolidation determine the shape of the accounts and the amount of analysis that can be supported. The next section deals specifically with the Canadian framework.

Extending the statistical analysis of the economy

i) General

The financial flow accounts in the Canadian system are designed to bring into a comprehensive framework the transactions in financial assets and liabilities both as they relate to each other and as they relate to the non-financial activities portrayed in the income and expenditure accounts.

For any period of account the transactions are brought together in a matrix form. The rows show saving, non-financial capital acquisition, net lending or borrowing, details of changes in holdings of financial instruments and net financial investment. (Net financial investment is conceptually identical to net lending or borrowing but is derived from the flows system by subtracting net increases in liabilities from net increases in assets.) The columns represent each of the main institutional sectors of the economy, for example, persons and unincorporated business and government.

The matrix in its most condensed form is a capital account for the economy and corresponds to the capital finance accounts of the income and expenditure system, with four basic sectors - persons and unincorporated business, government, corporate and government business enterprises, and non-residents- and three underlying types of transactions - saving, non-financial investment and net financial investment. The real contribution of the flow accounts is in disaggregating net financial investment to show transactions in the various forms of financial instruments (assets and liabilities) which give rise to the net position, and in systematically presenting information concerning the role of financial institutions in the economy. The schematic presentation of the Canadian system of national accounts on page 13 shows the financial flows matrix at a highly condensed level.

ii) Extension of sector detail

The extension of sector detail in the financial flow accounts mainly affects the corporate and government business enterprise sector, which is subdivided into non-financial and financial components; the financial sector is further subdivided to provide detailed information about the role and market share of specific types of financial institutions. Most of the funds moving through the Canadian economy at any time are routed through financial institutions, with a generally smaller portion moving directly between primary lenders and borrowers. The principal business of the financial institutions, the borrowing and lending of money, and the profitable matching of the requirements of both lenders and borrowers is highly specialised. This has led to a detailed classification system for financial intermediaries.

The flow accounts provide information on about twenty types of financial intermediaries or institutions, ranging from the banks through to venture capital companies and based on the type of service provided. Although the net financial investment of the financial intermediaries is generally small, their importance in providing the lubricant in the economic system is indicated by the substantial value of the offsetting changes in their financial assets and liabilities recorded in each time period. For example, the chartered banks may record virtually no net financial investment, yet changes in financial assets and liabilities run into billions of dollars as bank deposits and loans respond to changing economic and financial prospects.

The sectoring in the financial flow accounts is of a hybrid nature. At their most aggregative level, sectors correspond to the institutional definition employed in the income and expenditure accounts; the economic units assigned to a sector exhibit similar patterns of behaviour and the transactions between units in different sectors are analytically significant. However, for the subdivision of the corporate and government business enterprise sector, the definition of the sectors begins to look much more like an industrial classification with respect to the financial institutions. The sectoring is dependent not on similar patterns of behaviour and motivations - most of the financial institutions are profit motivated - but on the type of product or service rendered. The merit of this hybrid classification is that it enhances the analytical usefulness of the accounts in that most of the financing associated with the institutionally defined

sectors passes through the hands of the finance industry.

iii) Extension of transactions detail

The other statistical extension attributable to the flows is the systematic classification of financial transactions into categories or types of financial instrument. The net financial investment of each sector is broken down and fitted into a classification scheme composed of just over twenty types of financial claims.

Net assets and net liabilities are shown separately, that is, for any single asset or liability, increases and decreases are offset. A positive change in an instrument held as an asset indicates net investment or lending in that form, while positive change in the same instrument held as a liability means that debt has been incurred or borrowing taken place in that category. Negative entries in the asset and liability categories imply either net disinvestment or reduction of claims or debt outstanding.

The classification of financial instruments employed in the Canadian accounts is pragmatic, leaning heavily on the importance of the instrument in the context of Canadian financial markets and its analytical usefulness, rather than on pure principle. A number of different levels of classification have been suggested, including one based on the degree of liquidity of the instrument, another based on the length to maturity of debt and yet another which attempts to portray the markets in respect of different types of financial claims. The Canadian classification might be regarded as a blend of all three of the above. Individual categories used in the Canadian matrix will be discussed in a later section.

iv) The framework and organization of the accounts

The Canadian accounts set out the financial flow matrix in a form in which the transactions of each sector are shown in a single column. Row entries in each column record saving followed by acquisition of non-financial capital, the balance between these two aggregates represents the sectors lending or borrowing. Net increases in financial assets by type of instrument appear next and is followed by net increases in liabilities, also classified by type of instrument.

The categories used for classifying assets and liabilities are identical -they are in fact opposite sides of the same coin. The difference between the increases in assets and liabilities, net financial investment, represents the lending or borrowing activity of the sector derived from financial statistics. A highly condensed matrix with data for 1981 is given in Table 4 on page 76 which also includes the balance sheet matrix so that the similarities in format can readily be seen.

In theory and with perfect statistics, the lending or borrowing estimate derived from the non-financial data and the net financial investment figure derived from the financial data should be identical. Because of different source material and data deficiencies the two estimates normally do not coincide. A discrepancy entry appears at the foot of the column to balance the financial and non-financial data in the sector account.

The structure of the Canadian matrix is such that transactions for each sector appear in a single column and are grouped according to whether they affect assets or liabilities. An alternative arrangement is to display the data according to whether they represent a source of funds or a use of funds. The different presentations simply require a reshuffling of the data.

In order to look at a sector's transactions in terms of sources and uses of funds, it is necessary to regroup transactions by combining increases in assets and decreases in liabilities into a use column, and decreases in assets plus increases in liabilities into a source column. Funds are used in the process of acquiring assets or reducing liabilities, while the liquidation of assets or increase in liabilities provides a source of funds. No matter which presentation is selected the same net financial investment estimate is produced.

The matrix rows, as previously noted, provide information for a single type of transaction across all sectors. The upper portion of the matrix deals with saving and non-financial capital acquisition arising out of current production; totals for the main sectors are taken directly from the income and expenditure capital finance accounts. The statistical discrepancy necessary to equate the income and expenditure based gross domestic product estimates is also required to equate saving and investment and forms two distinct rows in the upper portion of the matrix. Because the error cannot be assigned to any single sector of the economy it appears in a separately identified column in the financial flow matrix.

One additional row for transactions in existing assets is required to complete the upper half of the matrix and arrive at a measure of sector lending or borrowing. It includes such items as land and mineral rights, fixed assets and inheritances and migrants funds. Transfers between sectors of existing non-financial assets in the Canadian accounts is somewhat incomplete because of data availability. The row sums to zero as acquisitions by sectors of existing assets are exactly offset by the disposition of those same assets by other sectors.

The rows covering net lending or borrowing and net financial investment also sum to zero. Given total saving equal to investment, any imbalance at the individual sector must offset in the aggregation process, that is, lending by sectors must match the borrowing of other sectors.

The main contribution of the financial flows system is recorded in the rows showing transactions in types of financial assets and liabilities. Just as in the sector classification process where each family, firm or

Table 4A. Canadian Financial Flow Accounts - 1981
Billions of dollars

	Persons and unincorporated business	Government	Corporate and government business enterprises		Rest of the world	N.I.E.A. Statistical Discrepancy	Total
			Non-financial	Financial			
Gross saving	**46.8**	**4.0**	**27.1**	**1.8**	**7.2**	**0.2**	**87.1**
Non-financial capital acquisition	24.2	9.2	52.9	1.0	-	-0.2	87.1
Capital transfers	-1.3	-	-0.4	0.6	1.1	-	-
Net lending or borrowing	**23.9**	**-5.2**	**-25.4**	**0.2**	**6.1**	**0.4**	**-**
Net financial investment	23.4	-5.7	-32.3	-	14.6	-	-
Net increase in financial assets	**37.8**	**20.7**	**32.2**	**81.4**	**36.0**	**-**	**207.9**
Official international reserves	-	0.6	-	-0.2	-	-	0.4
Cash and deposits	26.9	3.0	1.8	2.5	11.3	-	45.4
Trade and consumer credit	-	0.1	7.0	4.6	0.4	-	12.2
Loans	-	0.3	0.9	37.4	3.3	-	41.9
Securities	2.7	14.2	17.4	34.8	19.6	-	88.8
Life insurance and pensions	14.1	-	-	-	-	-	14.1
Foreign investments	-0.7	-	0.3	0.6	-	-	0.2
Other	-5.1	2.3	4.7	1.7	1.4	-	5.0
Net increase in liabilities	**14.4**	**26.3**	**64.5**	**81.4**	**21.4**	**-**	**207.9**
Official international reserves	-	-	-	-	0.4	-	0.4
Cash and deposits	-	0.1	-	39.7	5.7	-	45.4
Trade and consumer credit	4.2	0.8	7.3	0.1	-0.1	-	12.2
Loans	2.7	0.4	29.8	4.8	4.2	-	41.9
Securities	7.6	23.2	26.9	21.7	9.4	-	88.8
Life insurance and pensions	-	-	-	14.1	-	-	14.1
Foreign investments	-	-	-	-	0.2	-	0.2
Other	-	1.9	0.5	1.0	1.7	-	5.0
Discrepancy between lending and borrowing and net financial investment	0.4	0.5	6.9	0.2	-8.4	0.4	-

Table 4B Canadian National Balance Sheet Accounts - Year End 1981
Billions of dollars

	Persons and unincorporated business	Government	Corporate and government business enterprises		Rest of the world	All sectors	National Balance Sheet[1]
			Non-financial	Financial			
Non-financial assets	566.0	207.3	655.8	28.0	-	1457.1	1457.1
Structures and equipment	292.0	170.3	492.5	23.5	-	978.3	978.3
Inventory	16.1	0.3	80.1	-	-	96.5	96.5
Consumer durables	119.1	-	-	-	-	119.1	119.1
Land	138.8	36.7	83.2	4.5	-	263.2	263.2
Financial assets	529.9	175.2	217.9	639.6	257.6	1820.1	1562.5
Official international reserves	-	5.1	-	0.1	-	5.2	5.2
Cash and deposits	204.2	12.6	31.9	45.3	57.7	351.7	294.0
Trade and consumer credit	0.5	1.2	72.3	47.5	4.5	126.2	121.7
Loans	-	11.5	4.9	155.0	13.2	184.5	171.4
Securities	187.5	123.2	90.7	369.0	171.6	941.7	770.2
Life insurance and pensions	115.9	-	-	-	-	115.9	115.9
Foreign investments	2.8	-	1.3	5.6	-	9.7	9.7
Other	19.0	21.6	16.8	17.1	10.6	85.1	74.5
Total assets	**1095.9**	**382.4**	**873.7**	**667.6**	**257.6**	**3277.2**	**3019.6**
Liabilities							
Official international reserves	-	-	-	-	5.2	5.2	-
Cash and deposits	-	1.2	-	322.6	27.9	351.7	323.8
Trade and consumer credit	47.0	3.9	68.7	0.7	5.8	126.2	120.3
Loans	19.6	12.0	110.3	19.4	23.3	184.5	161.3
Securities	116.4	177.5	420.5	176.4	50.9	941.7	890.8
Life insurance and pensions	-	1.1	-	114.8	-	115.9	115.9
Foreign investments	-	-	-	-	9.7	9.7	-
Other	-	15.1	39.0	26.6	4.5	85.1	80.7
Net worth	**912.9**	**171.6**	**235.2**	**7.1**	**130.3**	**1457.1**	**1326.8**
Total liabilities and net worth	**1095.9**	**382.4**	**873.7**	**667.6**	**257.6**	**3277.2**	**3019.6**

[1] *National balance sheet column excludes rest of the world sector and indicates an excess of liabilities over financial assets equivalent to rest of the world net worth, that is, the outstanding debt of residents to the rest of the world*

government unit is assigned to a single sector, so each individual financial claim is classified to a particular type of financial instrument category. Each category appears twice in the system, once as an asset and once as a liability. For example, a new issue of government bonds will appear as a 'bond liability' of the government and as a 'bond asset' of the sector purchasing the bond. This double entry means that the sum of a particular financial instrument held as an asset is equal to the sum of that same instrument held as a liability, assuming identical valuation.

Maintaining the equality of claims held as assets and as liabilities allows the residual derivation of flows for some instruments for which direct measurement is difficult. For example, changes in holdings of federal government short-term paper reported by all sectors except persons and unincorporated business can be deducted from the federal government's net new issues to derive a sector estimate. The balancing of asset and liability transactions is in some respects analogous to the commodity balancing that takes place in constructing the input-output system where, in addition to confronting all available data, in the final analysis the compiler's skill and judgement play an important role.

Constraints in the construction of the accounts

There are certain constraints built into the financial flows framework, some general, and some peculiar to the Canadian accounts. The effect of the horizontal balancing requirements for saving and investment and for financial claims held as assets and liabilities, as well as the vertical requirement that each sector's saving be equal to its non-financial plus net financial investment, places rigid accounting constraints on the system.

i) The four entry constraint

Any single transaction requires four entries in the financial flows matrix in order to maintain a balanced system. For each transaction there are two sectors involved and within each sector there is a source and a use of funds entry. Assuming the transaction to be the purchase and sale of a government bond, the first entry records the purchase by the investing sector; the second records the offsetting sale by the government sector; the third entry records the source of funds for the investing sector's purchase; the final entry records the government's use of funds raised by the sale. If any of the above entries are not made, or if the transactions are recorded at different times or at different valuations, the system will not balance.

Because of the diverse sources of financial data there is no method by which complete coverage of all related transactions can be ensured. The degree to which, say, short-term paper liabilities are matched on the asset side of the account hinges on a large number of independent surveys of asset holding sectors, all of which may have different sample sizes and inflation factors. The problem of matching data derived from different sources is not a problem unique to the financial flow accounts but one which pervades all systems that present balanced accounts with data drawn from different sources. Given existing knowledge it is impossible to say what part of the initial difference between direct measures of asset and liability changes is due to survey coverage.

ii) Timing difficulties

The problem of timing is familiar to all compilers of financial data. Often a transaction is not entered in the books of the buyer and seller on the same day and because of this, the basic accounting records of outstanding assets and liabilities for a particular financial instrument will not be in balance. This discrepancy is known as 'float'.

The most familiar example of this type of discrepancy occurs in deposit claims on financial institutions. Deposit liabilities as seen in bank records, and counterpart assets recorded in holder-sector accounts, will differ by the value of cheques drawn on the accounts of senders but not yet entered on the books of receivers. The problem undoubtedly occurs in most categories of assets and liabilities and is likely to be important in such transactions as trade credit.

iii) Obtaining correct figures from balance sheet statements

Changes in the value of assets and liabilities derived from balance sheet statements frequently reflect more than the flow of funds arising from transactions. Changes due to these other influences, such as revaluations, are inappropriate for the financial flows.

Conceptually the financial flows aim to record only actual transactions at the price at which the claim is exchanged. For example, the sale and purchase price of an asset should be identical so that they are consistent with corresponding changes in, say, the bank balances of the transactors. In the case of certain transactions such as securities, there will be a difference in the sale and purchase price equivalent to brokers' commissions and costs; when possible, adjustments are made to exclude these current costs which more properly belong in the production accounts. A major problem faced when using balance sheet statements is that the balance sheet value of an asset written off when it is sold may differ from the cash received from its sale.

Capital gains and losses constitute the most important valuation changes captured on balance sheets which must be excluded from the financial flow accounts. For example, the sale of shares for $100 will result in a realized capital gain of $10 for the seller if they were originally purchased at $90. In the financial flow accounts the transaction should be recorded by the seller as a decrease in shares of $100, offset by an equal increase in, say, bank deposits - the flows should record the transaction at the price at which it took place. However, change data derived from the seller's balance sheets spanning the sale would record a decrease in securities valued at only $90(original cost), a corresponding increase in cash or deposits of $100

(sales price), and an increase in total assets of $10 due to capital gains.

Unrealized capital gains or losses may also be reflected in changes based on balance sheets. Corporations or governments may choose to recognize changes in the market value of assets, either in land, plant and equipment or financial investments. No transaction has taken place and the revaluation should not give rise to an entry in the financial flow accounts. It is not always easy, however, to detect changes of this nature.

Revaluations that are inadvertently recorded in the flows contribute to the discrepancy between the income and expenditure and financial flow accounts. Such items as capital gains are not recognized as income arising from current production and are omitted from the income and expenditure estimates. To permit revaluations to remain in the flows would result in a higher net financial investment figure than the equivalent lending or borrowing figure derived from the capital finance account of the income and expenditure system.

An important adjustment in the Canadian system arising from the use of balance sheet data is that relating to the conversion of claims denominated in foreign currency to Canadian dollars. As a result of floating exchange rates, recorded changes in Canadian dollars of foreign assets and liabilities incorporate changes in the value of the dollar. These valuation-type changes are not relevant for the flow accounts. Ideally the flows in Canadian dollars should be calculated from data on each transaction at the exchange rate governing at the time of the transaction. Clearly this is not feasible and adjustments to balance sheet changes are made at the aggregate level, taking into account movements in the relevant exchange rates.

The movement of economic units from one sector to another and changes in accounting or reporting procedures are reflected in balance sheet changes but should not be included in the flow accounts. Changes in ownership of economic units, in regulations governing operations, or in type of activity may all give rise to the movement of units from one sector to another. When this occurs, recorded decreases and increases in the affected sectors' assets and liabilities are omitted to the extent that they are related only to resectoring. Any changes that represent the unit's true financing activities will, of course, be taken into account in the sector to which the unit has been reassigned.

A wide variety of changes in accounting practices produce changes in balance sheet levels which should not be recorded in the financial flow accounts. An example is the change arising from the reclassification of a financial instrument. This might occur because of the separate identification of an asset previously grouped in a miscellaneous category. A further example is the switch that occurs when unconsolidated accounts are consolidated, an event that normally occurs after a merger or take-over; a loan from one entity to another disappears when the balance sheets of two separate units are consolidated.

iv) Consolidation or combination of accounts

In order to construct financial accounts on a sector by sector basis the transactions of all units classified to a specific sector must be summed. In the process of summing a decision must be taken as to whether transactions between units within the sector should be included or excluded. If such transactions are excluded, the accounts are on a consolidated basis; if they are included, the accounts are considered to be combined. For example, a loan from company A to company B would be eliminated in a consolidated account but would remain in the aggregate loan figures for the sector in a combined account.

It may be argued that consolidated accounts preserve the analytically significant inter-sector flows while internal transactions, which may or may not have great analytical value, are eliminated. The principle is similar to that governing business accounting, but in practice there is a considerable difference. In business, consolidation relates to the accounts of companies closely related and in situations where the transactions may be at less than arm's length. This is not true in the case of the financial flows, where transactions between units in the same sector are quite likely to be at arm's length, and have equal analytical significance to those between units in different sectors. The consolidation of accounts tends to simplify the analysis of data by reducing the number of transactions recorded both within sectors and at the aggregate level.

Despite a preference for consolidated accounts the method of recording is frequently determined by the availability of data. In order to prepare consolidated sector accounts it would be necessary to identify assets and liabilities on a 'from-whom, to-whom' basis and such detailed data are usually unavailable. In the Canadian accounts, because of data limitations, most sectors are prepared on a combined basis. For example, in the government sector, provincial and federal government bond issues held as assets by other levels of government or government agencies appear in the sector totals and are not cancelled out.

There are exceptions to the combined accounting approach in the Canadian system. These occur in the non-resident sector where data are presented entirely on a consolidated basis. The data base for this sector is the balance of payments which records only transactions between Canadian residents and non-residents. In the non-financial corporate business sector the data are presented on a partially consolidated basis. The survey upon which the data depend permits consolidated reports for parent corporations and their subsidiaries. The sector therefore consists of a mixture of consolidated results where the transaction is between closely related companies, and combined results where corporations are unrelated. Where corporations grouped in a

consolidated report cross sector boundaries, unconsolidated accounts are specifically requested.

Relationship of economic and business accounting

Like the income and expenditure accounts, financial flows have their origins in business accounting. The link is most easily forged for the corporate and government business enterprise sector, but the same principles apply to other sectors, with modifications in approach.

The business statements most closely linked to the financial flow accounts are the balance sheet and the statement of changes in financial position. If a choice existed, the changes in financial position statement would be the preferred data source as it more directly fits the requirements of the flow accounts. In most cases however, only balance sheet figures, which require more manipulation and adjustment, are available.

The corporate balance sheet consists of a valuation of a firm's assets against which are set its liabilities - the balance, normally an excess of assets over liabilities, represents the stockholders' equity. The asset side of the balance sheet shows fixed assets net of depreciation, securities and other financial investments with long-term maturity dates, and current assets or resources that can be converted into cash or consumed in the short-term, such as cash, bank deposits, trade receivables and inventories. The liability side of the balance sheet is also subdivided into longer-term debts such as bonds and shorter-term debts such as trade payables and short-term bank loans. The balancing item, representing the equity of the stockholders, is usually shown in two parts, the capital contributed by the owners in exchange for stocks and the part attributable to the earnings of the firm which have not been paid to the owners, the retained earnings.

To construct the financial flow accounts, balance sheet levels are required at different points in time to permit the calculation of flows or changes. Although the basic structure of the flows and balance sheets coincide, some reformatting is required. The single major drawback, previously noted, arises because changes derived from balance sheet levels may contain changes other than those attributable to the flow of funds, such as revaluations of assets and liabilities, realized capital gains and losses, and reclassification of assets and liabilities.

A 'changes in financial position' statement provides information on the sources of funds becoming available to the firm and how they were used. It is based either on cash transactions or on working capital but also includes transactions that affect neither, such as the exchange of capital stock or long-term debt for long-lived assets such as land or buildings. Typical of the entries found under sources of funds are those attributable to net income from operations, borrowing, investment by owners and sales of productive assets. Under uses of funds the most common entries are purchases of productive assets, repayment of debt, investment in securities and the distribution of funds to owners of the firm.

The statement of changes in financial position converts readily to the financial flow format, and indeed provides for the national accounts sectors the same sort of analytical tool that it provides individual firms. The only steps required in using the data are the selection of appropriate entries and the regrouping of data. In the first case, for example, if net income appears as a source of funds and distribution of dividends as a use, dividend payments must be netted from income in order to provide the retained earnings figure required as a component of saving in the flow accounts. In the second case, a particular asset category may appear both as a source and use of funds in the business accounting statement, whereas in the flows these two asset transactions would be shown as one entry on a net basis.

The sectors

The discussion on sectors combines descriptions for both the financial flow and national balance sheet systems. The number of sectors separately identified in the financial flows is considerably greater than in the income and expenditure accounts. At the highest level of aggregation, the four sectors used in the financial accounts, persons and unincorporated business, corporate and government business enterprises, government and the rest of the world are compatible with those found in the income and expenditure accounts, using identical concepts and definitions. It is within the corporate and government business enterprise sector that the financial accounts provide much greater detail.

The primary sub-division of the corporate and government business enterprise sector is between non-financial and financial corporations. The financial sector identifies separately the main groups of financial intermediaries, defined as those principally engaged in obtaining and redistributing funds. Since the main purpose of the financial flow accounts is to provide an analytical tool that links financial and non-financial activities and illuminates the way in which the economy is financed, a full exposure of the financial institutions is necessary.

Non-financial corporations are only split into two groups, privately-owned and government-owned enterprises. The private sector includes the operations of foreign controlled corporations in Canada but excludes the foreign operations of resident Canadian corporations. Some investment holding companies, due to consolidated reporting with their operating companies, are included in the sector, although they more properly belong with financial corporations; real estate developers and operators are considered as part of the sector. Included in the non-financial government enterprise sector are corporations owned by government, selling primarily to outside government purchasers, and attempting to meet costs through their pricing policies. Government-owned corporations not meeting these criteria are consolidated in the general government sector.

The financial sector contains close to twenty sub-sectors, each identifying a type of financial service or institution. The titles are largely self-descriptive and the units of classification are company or enterprise data. The following paragraphs briefly describe the type of sub-sectors under five broad groupings.

The first group, the monetary authorities, contains those institutions bearing responsibility for the implementation

monetary policy and official transactions in foreign exchange. The three sub-sectors are the Bank of Canada, the Exchange Fund Account in which are recorded foreign exchange transactions carried out on behalf of the federal government, and 'other monetary authorities', a sub-sector covering transactions in official international reserves held by the federal government.

The banks and near-banks group contains five sub-sectors sharing the characteristic of being deposit accepting institutions. They are the chartered banks, Quebec savings banks, credit unions and caisses populaires, trust companies, and mortgage loan companies. The chartered banks sub-sector relates only to domestic or 'booked-in-Canada' banking operations and excludes the operations of their majority-owned subsidiaries not involved in banking. The credit unions and caisses populaires sub-sector comprises savings and loan co-operatives owned by members and, in many cases, serving members only; members normally work for the same company, or belong to the same church, trade union or residential district. Trust companies accept deposits and lend funds, predominantly in the form of mortgages; they also administer estate, trust and agency funds on behalf of clients. In the latter case, because the clients retain ownership of assets administered, transactions in these assets are not included in the sub-sector but appear in the persons and unincorporated business sector, or in the trusteed pension plans sector in the case of pooled pension funds administered by trust companies. Transactions in mutual funds handled by trust companies are recorded either in the personal or the mutual funds sector depending on the type of fund. Mortgage loan companies accept deposits and invest principally in mortgages; to this extent they resemble the trust companies, but they are not permitted to engage in the fiduciary activities open to trust companies.

The major group, life insurance and pension funds, contains three sub-sectors: life insurance business, segregated funds of life insurance companies and trusteed pension funds. National accounting conventions characterize these three sectors as 'associations of individuals' insofar as they accumulate assets on behalf of policy-holders, annuity and pension beneficiaries. The principal liability of all three sub-sectors is to the personal sector. The life insurance sector includes fraternal benefit societies. As in banking, the operations relate only to domestic activity, or insurance underwritten on Canadian residents. Segregated funds are separate investment accounts not subject to the same restrictions imposed on life insurance business by regulatory authorities (90% of segregated funds' assets are held for group pension plans). The trusteed pension plans sector covers trustees who accept and invest contributions, pay out benefits and administer pension plans according to the terms of trust agreements. The sector is not inclusive of all pension funds which may also be included with government, life insurance, mutual funds and various other financial institutions.

The fourth major grouping, 'other private financial institutions', contains six sub-sectors: investment dealers, open-ended mutual funds, property and casualty insurance companies (principally fire and automobile), sales finance and consumer loan companies including those providing loans to customers of their parent companies, accident and sickness branches of life insurance companies and a catch-all 'other' subsector which includes venture capital and other business financing companies, investment and holding companies, closed-end funds and finance leasing companies.

The final major grouping, public financial institutions, covers the two remaining sub-sectors within the overall financial sector. The institutions, controlled by the federal and provincial levels of government, have the same characteristics as non-financial government enterprises except that their activities are primarily of a financial nature, such as the Canada Mortgage and Housing Corporation or the Export Development Corporation at the federal level, and the Insurance Corporation of British Columbia or Caisse de dépot et placements du Québec at the provincial level.

Classification of financial instruments

As with financial sectors, readers are likely to be less familiar with the classification of financial instruments than other classification systems. Because no officially recognized standard classification exists for financial instruments, it is necessary to itemise the categories. Full descriptions are contained in the publication “A Guide to the Financial Flow and National Balance Sheet Accounts”, Statistics Canada, Catalogue 13-585.

The financial flow accounts distinguish over twenty categories of financial instruments in the main matrix. The classification is based mainly on the sector issuing the debt instrument and on the type of instrument. Other characteristics are also evident in some categories and these provide information on whether the instrument is denominated in domestic or foreign currency and, to some extent, the liquidity of the instrument. The liquidity criterion is difficult to apply in a classification scheme for the instrument may have an initial long term retirement date but be close to maturity, or despite its long term it may have a high degree of marketability.

The classification system used in the Canadian financial flow accounts has been developed partly on the basis of the analytical importance of the instrument, partly having regard to the available data and partly with an eye on the need to keep the matrix of manageable dimensions. However, having to fit all financial instruments within a fairly restricted number of categories results in some less pure than others.

The categories can be grouped into five broad classes, each possessing some analytical usefulness in its own right. These are Canada's official international reserves, currency and deposit claims on financial institutions, credit market instruments, life insurance and pension reserves and miscellaneous other claims.

a) Canada's official international reserves include gold; convertible foreign currency denominated deposits and securities held as assets by the monetary authorities; loans by Canada to the International Monetary Fund (IMF) and Canada's contributed quota to the IMF less the Fund's holdings of Canadian

dollars; and the allocation and transactions in existing Special Drawing Rights, a form of reserve asset created by the IMF to be used within certain prescribed limits for settlement of balance of payments obligations.

b) Currency and deposit claims on financial institutions include Canadian dollar deposits booked at chartered banks in Canada and at the Bank of Canada plus currency outstanding and coin in circulation; deposits held at the near-banks and public financial institutions including shares and retained earnings in credit unions and caisses populaires considered to be the institutions' liabilities to depositors; and foreign currency holdings and deposits booked at chartered banks in Canada and the Quebec Savings Bank, plus foreign currency deposits booked abroad at branches, agencies and subsidiaries of Canadian chartered banks and at foreign banks and other deposit accepting institutions.

c) Credit market instruments represent the core of financial claims and the principal means by which the non-financial sectors raise funds through formal credit channels; although used by the financial sectors they are relatively less important as a source of funds. This broad grouping of instruments includes government bonds and treasury bills, private sector bonds, stocks, bank loans and loans by all other sectors, mortgages, consumer credit, finance and other short-term paper. Although not formally a component category of the credit market sub-group, 'claims on associated enterprises' is noted because the links between parent and affiliated enterprises are mainly composed of a mix of categories of credit market instruments such as stocks, marketable debt and loans. The category 'foreign investments' is more descriptive of the sectors involved in the transactions than of the instruments but it represents in fact Canadian residents' investments in a composite of foreign credit market instruments.

d) Life insurance and pensions is a special category representing the excess of current income over current expenditure of life insurance and pension funds. Under national accounting conventions this surplus belongs to the personal sector and is recorded as part of the saving of that sector. The financial flows record the surplus as an asset of the persons and unincorporated business sector and as a liability of the various financial sectors managing the life insurance and pension plans. These savings represent the largest sources of investment funds in Canadian financial markets.

e) The final group includes 'trade payables/receivables' and 'other assets/liabilities'. The former category covers short-term credit associated with the normal buying and selling of goods or services. The latter covers a wide variety of miscellaneous transactions not included elsewhere. Accrued interest is an important entry for banks and government while accrued corporate income tax less taxes paid is required to maintain the system in balance. Similar adjustments are made to allow for the difference between transactions entered in the current and capital accounts when the payment becomes due and the payments entered in the financial accounts when they are actually made. Prepaid expenses and dividends declared but not paid are included in the category as are unearned premiums and unpaid claims of some branches of the insurance industry.

The final line in the flows matrix is the sector discrepancy representing the difference between net lending/borrowing from the income and expenditure accounts and net financial investment based on financial data. In sectors in which all data come from consistent financial statements there is no discrepancy, but in those sectors where the capital accumulation and financial data come from different sources, discrepancies exist. The discrepancy row reflects the statistical errors and omissions arising in three components of the system of national accounts, the income and expenditure accounts, the financial flows and the balance of payments, and may provide some clues as to the nature of the problem areas.

Other features of the financial flow accounts

To provide a succinct picture of financial markets a summary table is prepared in which the principal sectors' borrowing and lending activity are highlighted. By focussing on market instruments and omitting intermediary activity like deposit taking and transactions such as the extension of trade credit and claims on associated enterprises, it provides an approximation of final borrowing through organized markets for securities and negotiated loans. Funds raised by non-financial domestic sectors constitute by far the greater part of this domestic credit market activity.

Although the intermediation process is vital to the system insofar as it increases liquidity in the economy and lubricates production and demand, it is analytically useful to be able to see the primary user and source of funds. In total, the amount of funds lent by non-financial sectors tends to be similar to the amounts borrowed by them even though most of the funds flow through the financial intermediaries. The financial flow matrix focusses on the intermediaries and the spectrum of debt instruments designed to satisfy both lenders and borrowers. The credit market table short-circuits intermediation and shows the flow of funds from the primary lenders to the ultimate borrowers, eliminating the doubling of lending activity that takes place when funds flow through intermediaries.

Although almost all intermediation is undertaken by financial institutions, non-financial sectors engage in intermediation to the extent that they borrow in excess of their non-financial investment needs, using the surplus for financial purposes; financial institutions, on the other hand, borrow to meet their own investment needs. This cross-over activity is, however, not sufficiently important to negate the analytical usefulness of the financial/non-financial split.

Uses of the financial flow accounts

A review of users revealed the accounts were being used by a wide range of analysts but with varying degrees of success and intensity. The financial flows system has been, or is being used, in the federal finance department,

the Bank of Canada, some provincial government departments and enterprises, and by a number of financial and academic institutions.

The system as it stands provides a consistent and comprehensive framework for studying and describing the role of institutional sectors and financial instruments and their relationships in financing economic activity in Canada. The framework and the constraints that are built into it make it a valuable tool for assessing the impact of changes in 'real' or financial variables on the overall financial system. For example, if government borrowing or business non-financial investment is forecast to rise sharply, the impact of these events on financial markets can be traced in the accounts through are reiterative process by which the markets are brought into equilibrium at the new level of government borrowing or business investment.

Although not used extensively in Canada for forecasting or projecting financial market developments, interest rates, or the impact of financial conditions on 'real' economic activity, the flows framework can be, and is being used for these purposes in other countries. The following depicts the role of the flows in this type of analysis.

Projections of income, current expenditure, saving and capital formation for each sector in the income and expenditure accounts provide, residually, estimates of net financial investment undertaken by each sector. Within the framework of the flows these estimates can be allocated to selected financial instruments or categories on the basis of past experience and assumptions regarding monetary policy. The resulting estimates of sources and uses of funds by the non-financial sectors provide the basis for estimating the flow of funds through the financial intermediaries - the non-financial sectors' changes in certain types of claims being largely reflected in counter part asset and liability changes of financial intermediaries.

This first round of projections may produce results for the intermediaries which are outside the range of likely behaviour patterns. Successive rounds of adjustment are continued until reasonable results are achieved. This process may force the analysts back to the production accounts and are-assessment of the projected savings estimate. The whole exercise not only links the 'real' and financial forecasts, but reveals likely financial developments, pressure points and the direction of interest rate changes.

The evidence suggests that the financial flow accounts are used in conjunction with outstanding levels of financial claims to assist in debt management, and to monitor changes in requirements for funds and the financial market's ability to absorb new demands. These assessments of the demand for and supply of financial instruments also provide another backcloth against which the likely path of interest rates can be forecast. The scheduling of new market issues is sometimes influenced by an analysis of capital markets as portrayed in the accounts.

The flow accounts are used in some financial institutions to determine their market share of saving and investment flows; because of their comprehensiveness, the accounts lend themselves to market-share type analysis particularly well. For example, the degree to which new funds are flowing to the banks, trust companies, mutual funds and other competing institutions is readily discernible in the matrix presentation.

Two features have mitigated against the more general use of the flow accounts. First, they are difficult to popularise and therefore receive limited publicity; no single figure readily emerges upon which to focus attention, such as the gross domestic product or the current account deficit or surplus in the balance of payments. Secondly, and of greater importance, because they lack a theoretical construct they are in some respects more complex and difficult to interpret than other branches of the national accounts.

The financial flows are positioned between the capital finance accounts of the income and expenditure system and the national balance sheets. They are linked directly to the income and expenditure accounts through the net lending or borrowing of each sector, and to the balance sheets through wealth and portfolio changes. The choices made by economic units regarding production, consumption, physical investment, financial investment and borrowing are related to one another, and decisions made in any of these areas may be reflected in the financial flow matrix, constrained only by the income and net worth of the unit.

The full potential of the flows awaits a better understanding of the relationships between income, money and wealth. As noted at the beginning of this chapter financial transactions recorded in a single cell in the matrix may be the result of decisions having to do with new capital projects, the purchase or sale of existing physical assets, current consumption or production, or transactions in outstanding financial claims. Each of these decisions may be affected by income, the availability of credit and net wealth.

Links and reconciliation with balance sheets

This section deals primarily with the relationship of the financial flow accounts to national balance sheet accounts. Links with the income and expenditure accounts were dealt with in the previous chapter, and those with the balance of payments will be dealt with in the chapter describing that system.

The basic format of the financial flows and the national balance sheets is very similar with identical sector detail and financial asset and liability categories. Some differences occur in the presentation of non-financial assets and an additional line recording the net worth (total assets less liabilities) of each sector appears in the balance sheet system. The essential difference between the two systems is that the flows record financing during successive time periods while the balance sheets relate to outstanding levels of assets, liabilities and net worth at points in time.

The conceptual link is clear - changes in assets and liabilities during a period affect the levels of those same assets and liabilities between the beginning and end of that period. In practice, the linking of the two systems cannot be achieved by simply taking the flows during the period and adding them to the opening balance sheet to arrive at a closing balance sheet. Other events occur which have an impact on the balance sheet figures. In order to understand the precise relationship between the two systems a formal reconciliation of the numbers is required. The reconciliation will be explained in two parts: that relating to non-financial assets and that dealing with financial assets and liabilities.

Investment in non-financial assets in the flow accounts covers gross new capital formation in residential and non-residential construction, machinery and equipment and the value of physical change in inventories. The balance sheet system extends the definition to include consumer durable goods. This difference in coverage and significant definitional differences between 'land' in the balance sheets and 'net purchases of existing and intangible assets' in the flows account for a large part of the disparity between the opening to closing balance sheet change and the investment flows recorded for non-financial assets.

The inclusion of consumer durables as part of the nation's wealth in the balance sheets is an important conceptual departure from the treatment accorded them in other parts of the system. In the income and expenditure accounts they are regarded as part of consumption and not investment. If consideration were to be given to reconciling the systems by adopting the balance sheet treatment, the implications would be profound. Among other things, the value of gross domestic product would be raised by the value of the service imputed to consumer durables over their lifetime and personal saving would be significantly higher. For the present, it has been agreed to live with the different conceptual treatments and to continue to treat the difference as an item in the reconciliation statement.

Even for those non-financial assets where coverage is comparable, sharp differences exist between flows and changes in levels. The reconciliation necessary in these cases focuses on two major items and a number of smaller and less important ones. First, the flows record gross investment in construction and machinery and equipment, while the balance sheet change is derived from figures net of depreciation. In order to put the two estimates onto a comparable basis the flow figure must be adjusted downward by the depreciation allowance for the period.

The second major reconciliation item relates to revaluations of non-financial assets which take place between balance sheet dates. Revaluations due to price changes have impacts on levels that are not reflected in the flow data. For the national balance sheet accounts the stock of non-financial assets is revalued each year at current prices. When prices are rising or falling, a portion of the value of the change in stocks between the opening and closing balance sheet reflects price movements alone. To reconcile the stock and flow data an allowance must be made for this revaluation difference.

Other reconciliation adjustments are due to definitional or conceptual differences, unforeseen events and structure and classification changes which are reflected in balance sheets but not recorded as flows. The discrepancy items published in the financial flows and income and expenditure accounts are also part of the reconciliation process.

The reconciliation required in the financial asset and liability categories tends to be centred on conceptual and revaluation differences. An example of an important conceptual difference is the treatment of corporate equity in the balance sheets and in the flows; changes in the former include retained earnings, whereas in the latter the estimate relates only to net new issues. Revaluations due to price change are most apparent in the area of foreign currency exchange rates. Balance sheet claims denominated in foreign currencies are converted to Canadian dollars at the current exchange rate and therefore the year-to-year changes reflect movements in exchange rates that are not included in the flows series. As with the non-financial series, and for the same reasons, other reconciliation items are required.

Published national balance sheet accounts provide a detailed reconciliation statement in which the flow estimates are harmonized with the change in balance sheet estimates. Tables appear for each of the four main national accounts sectors, plus a sub-division of the corporate and government business enterprise sector between non-financial and financial corporations. For each sector, each category of non-financial and financial asset and liability is reconciled. The tables provide explicit links between the balance sheets and financial flows both in terms of concepts and absolute dollar values. The process of compiling reconciliation statements has led to improvements in the quality of both flow and balance sheet data.

II - Balance sheets

General

The national balance sheet accounts published in 1985 represent the most recent development in the Canadian System of National Accounts, and in fact, complete the economic system of accounts as they are presently conceived. The latest set of accounts expands on those available in previous years. In early 1976 partial balance sheets for the years 1970-1972, covering only financial assets and liabilities for selected sectors, were published. In the following year these were revised and extended to cover the full range of years for which the financial flows were available, 1961-1976; they were subsequently updated and revised on a regular annual basis.

The major development in the currently published series is that they now include estimates of the stock of non-financial assets and an estimate of net worth, instead of being restricted to financial assets and liabilities. The balance sheets cover all sectors and sub-sectors represented in the financial flow accounts, as well as a summary of the four main national accounts sectors. The

schematic presentation on page 13 shows the balance sheet in matrix form for the four principal sectors. The sector balance sheets are statements of what each sector owns, what it owes and its net worth at a point in time.

Even though the full range of tangible and intangible non-financial assets is not included in the estimates, the present structure allows the calculation of a restricted figure of the wealth of the country. The national wealth is defined as the total stock of non-financial assets in the country; a net national wealth concept adjusts this figure by the country's net international indebtedness - its financial claims on, less its liabilities to, non-residents.

In contrast to other branches of the national accounts system which measure flows between two points in time, the balance sheet measures the stock of assets and liabilities and net worth at a point in time. It is a snapshot of the condition of the nation as opposed to a record of movement.

Despite this different perspective, the national balance sheet is as closely related to the other components of the system as a firm's balance sheet is to its statements of income, retained earnings and changes in financial position. Changes occur in the stock of assets and liabilities in large part because of saving and investment and lending and borrowing decisions. To the extent that a firm retains earnings and purchases new fixed capital during a period of account, the balance sheet will change. To the extent that a nation curbs its consumption, saves and invests in tangible assets, so will its balance sheet record increased non-financial assets and national wealth.

Within the context of the System of National Accounts the development of balance sheets has been regarded as vital by some economists. It is considered a key component of the analytical apparatus, without which changes in economic variables, particularly those depicting the financing of economic activity, cannot be adequately understood and explained. Institutions, it is claimed, are guided in their investment policies by the existing distribution and level of financial claims and by balance sheet ratios, such as those indicating liquidity. Estimates of the stock of fixed capital have long been recognized as a crucial ingredient in the analysis of productive capacity and as a critical factor in assessing potential investment programmes and demand for new funds.

The Canadian system presents the balance sheets both in the form of time series for single sectors and in the form of single year matrices covering twelve domestic sectors and the rest of the world sector. The matrix includes the detail of non-financial and financial assets, liabilities and net worth in a single column for each sector, the net worth being the excess of total assets over liabilities. The sector columns also include a sub-total for net financial assets. A positive figure indicates outstanding net financial claims on other sectors and a negative figure, the net indebtedness of the sector to others.

Under present national accounting conventions, investment in non-financial assets in Canada by non-residents is not classified as such. In the financial flows and national balance sheets, investment in fixed capital by non-residents is recorded as if undertaken by a notional domestic unit with financing provided by an external unit. A domestic sector is shown to have increased investment in fixed assets and a counterpart liability, while the financial investment of the rest of the world is shown to have increased by an equal amount.

A condensed example of the single year matrix is given below.

Annual Matrix

	Sectors 1... to...13	Total All Sectors	National Balance Sheet	Consolidated National Balance Sheet
Non-financial Assets ...				
Financial Assets ...				
Liabilities ..				
Net worth . .				

The rows in the matrix are summed in three ways:-

i) the first, labelled 'total', is a simple addition across all sectors, including the rest of the world, in which financial assets and liabilities completely balance,

ii) the second total, labelled 'national balance sheet', adds across all domestic sectors, omitting the rest of the world. The financial assets and liabilities in this column no longer balance due to Canadian net indebtedness to the rest of the world; the total net worth of all domestic sectors falls short of the country's non-financial assets to the extent that part of investment in Canada has been financed by the rest of the world,

iii) the final column, 'consolidated national balance sheet', nets domestic liabilities against domestic financial assets, the residual balance representing Canada's net indebtedness to the rest of the world. Net worth at the national level, otherwise known as net national wealth, is equivalent to total non-financial assets less Canada's net indebtedness to the rest of the world. This form of presentation is frequently referred to as the national wealth statement.

Table 4 on page 52, in addition to giving 1981 figures for the financial flows, also provides a condensed version of the balance sheet matrix as at the end of the year.

Extending the statistical analysis of the economy

Building from the framework developed for the financial flow accounts, the national balance sheet accounts do not expand the sector detail, nor to any great extent do they extend the classification of categories of non-financial and financial assets and liabilities, but they do provide a picture of the economy in a completely new dimension. The new range of data are consistent and integrated with other components of the System of National Accounts through a series of reconciliation statements.

The balance sheets contribute to the extension of knowledge in a number of ways. They reflect both the effects of capital transactions from the income and expenditure accounts, and lending or borrowing activity from the financial flow accounts; they also permit an

assessment of the impact of revaluations of assets on national wealth and an individual sector's net worth.

The balance sheet accounts build to an important national figure, the net wealth of the country, or as it is sometimes called the national net worth. Net worth is the value of all assets less any liabilities. The definition calls for the resolution of a number of issues including decisions on the scope of the assets to be included in national wealth, the most appropriate valuation of items, and the maintenance of consistency with other components of the national accounts;

The size of the national wealth estimate hinges on what tangible and intangible non-financial assets are included. The Canadian accounts include first and foremost, the stock of tangible reproducible capital - items of fixed capital such as residential and non-residential construction, machinery and equipment, and inventories of raw materials, goods-in-process and finished goods. This grouping includes land improvement costs and transfer costs on tangible non-reproducible capital. The inclusion of these goods is consistent with the capital formation estimates in other parts of the system.

Although more controversial, consumer durable goods such as automobiles, refrigerators, washing machines, etc., conceptually fall within the scope of the definition. In the income and expenditure accounts, these items are treated as consumption goods with no measured future stream of benefits. On these grounds it has been suggested that they be omitted from the balance sheet accounts. However, the Canadian system includes them because they do in practice yield services to households over periods well in excess of a year and, on most counts, are recognized as part of the wealth of the country.

Conceptually the wealth estimate should also include the value of such assets as land, waterways, timber resources, sub-soil deposits and fishery stocks. It has been suggested that historical national monuments should also be included under this category. Because of enormous valuation difficulties and in order to maintain some consistency with the transactions accounts in the rest of the system, only those assets which are used to produce goods and services commercially and are likely to be traded are included. The inclusion of some natural wealth estimates would raise interesting ownership and sectoring questions. Of the above list, the Canadian balance sheet accounts cover only privately owned residential and agricultural land and commercial non-residential land.

A final potential constituent of national wealth, intangible non-financial assets, is generally defined to be composed of such items as patents, copyrights, trade-marks, leases in respect of land and buildings, and concessions to exploit natural resources. Less conventional has been the argument to include the stock of scientific knowledge and the supply of human capital as part of a nation's wealth. At present the Canadian balance sheets contain no estimates for intangible non-financial assets.

Clearly, at both the Canadian and international level there is an element of arbitrariness surrounding national wealth estimates that depends on acceptance or rejection of definitions of what constitutes capital. This is accentuated by practical problems of obtaining statistical coverage and of valuing the recommended inclusions.

As indicated earlier, for the nation as a whole, the measure of its net wealth is derived by summing non-financial assets across all domestic sectors and adjusting for net financial claims on non-residents, or by adding the net worth of each sector. For a single sector however, its net worth may be more or less than the value of its non-financial assets depending on whether it has a net positive or negative balance in its holdings of financial assets.

As with national wealth, the measure of a sector's net worth depends on conventionally accepted definitions concerning the coverage and valuation of items contained in the balance sheet. In addition, the measure is arbitrary to the extent that it may be varied depending on the purpose for which it is designed. For example, in the Canadian accounts, three estimates of net worth appear for the corporate sectors of the economy. These will be described in the section discussing the classification of assets and liabilities.

There are different perceptions of what constitutes net worth. It has been argued that no independent net worth should be attributed to the corporate sector as the ultimate ownership is traceable to individuals. Using this argument, net worth of corporations would be transformed into a corporate liability with the claim held by individuals, thus raising the tatters' asset holdings and increasing their net worth. The preferred treatment hinges on the potential use of the data. In this particular example it is doubtful whether increasing the net worth of persons and eliminating that of businesses would increase the analytical usefulness of the estimates, for this is not the perception that normally governs the behaviour of either businesses or persons.

Others have argued that a useful alternative measure of corporate net worth is one that excludes the value of issued capital stock but leaves intact the retained earnings of the corporation. The impact of financing a new project by floating a new stock issue or using retained earnings is different in many respects and is a useful distinction in the statistics.

The relationship of economic and business accounting

National balance sheet accounts are the most closely related to business accounting of any branch of the Canadian System of National Accounts. The basic identity that the value of assets equals the value of liabilities plus owners' equity or net worth holds true for the firm and the nation. The similarities are more apparent in individual sector balance sheets than at the total level where financial asset and liability claims are equal and offsetting. The major departures from business accounting occur in the areas of valuation and in specific inclusions and exclusions of items.

Assets are resources available to the firm, through ownership or the right to use, to be utilised in producing goods and services or to be sold or consumed. They consist of holdings of financial assets including amounts

prepaid for such items as rent, interest and insurance that will be consumed in the next period of account. They also include non-financial items such as property, plant and equipment, inventories, and intangible assets such as patents, trade-marks, franchises and goodwill. In business accounting fixed assets are normally valued at historical or acquisition cost and are shown net of depreciation, also based on historical cost. In the national accounts the generally preferred valuation is current market value, although in practice variants similar in concept, such as written down replacement cost, may have to be used.

Liabilities and net worth are the claims of creditors against the firm including trade accounts payable, taxes and interest payable, and loans, notes and bonds outstanding, plus the owners' equity in the firm which is normally comprised of two major elements, contributed capital by the owners and retained earnings. The single most important adjustment in converting this side of the balance sheet to the economic accounting framework concerns the allocation of share capital. In business accounts the original price of stock at the time of issue is considered part of net worth, whereas in the economic accounts it is recorded as a liability under the 'shares' category in the corporate sectors.

Because the Canadian system provides estimates of net worth on three different conceptual bases for the corporate sectors some further explanation is warranted at this point. Although only one calculation is used to derive net worth on a consistent basis for each sector throughout the matrix, two additional concepts are published for analytical use for each of the corporate sectors in the individual sector presentations.

The net worth concept used for the corporate sector in the basic balance sheet matrix is derived by deducting liabilities from total assets. The owners' equity in terms of original share costs plus retained earnings is treated as a liability. In business accounts this would result in a net worth of zero or close to zero. In the economic accounts however, because fixed assets have been revalued at replacement cost, the technique results in a net worth which reflects the difference between the replacement and historical cost. The effect of treating corporate owners' equity as a liability is that it transfers most of the net worth to the sector holding the shares but leaves the revaluation of assets as the net worth of the corporate sector. This measure of net worth has limited analytical significance but fits within the balancing constraints of the matrix.

Two other estimates of net worth for the corporate sectors are provided for analytical purposes. One, which does not treat share capital and retained earnings as liabilities but rather as part of the net worth, provides a net worth figure considerably higher and corresponds to a 'liquidation' value of the sector. The other measure relates more closely to the estimate produced by standard business accounting, providing a net worth figure equal to the owners' equity with shares valued at book value plus retained earnings. This version implicitly values investment in fixed assets at historical or acquisition cost.

Continuing the comparison between economic and business accounting reveals a further difference. Business balance sheet contingency entries, such as provision for bad and doubtful debts, that have no counterpart entries on the books of another transactor are regarded as inappropriate for inclusion in sector or national balance sheets.

A number of non-financial intangible assets found on the balance sheets of business are excluded from the sector and national balance sheets, either on the grounds that they reflect in part an element of human capital or on the rather more pragmatic grounds that the collection of data is at present impracticable. These include, among others, trade-marks, patents, copyrights and franchises.

Goodwill is an example of a particularly nebulous intangible that appears on many business balance sheets. Goodwill normally results from one company's acquisition of another and represents the amount by which the purchase price exceeds the current market value of the acquired assets and liabilities. It is attributable to factors like customer loyalty, good employer/employee relationship, and exceptional ability of management. Goodwill is not included in national or sector balance sheets on the grounds that it is largely related to the performance of human capital and is therefore not appropriate.

Valuation of assets and liabilities

i) General

Unlike those components of the system measuring flows over relatively short time periods, balance sheets present figures for assets and liabilities which have accumulated over long time periods. This poses vexing problems concerning the appropriate valuation. Data for most flow series automatically carry values relating to the current period of account, with one or two exceptions such as inventories. This is not true of balance sheets where values reflect prices and costs spread over many years. Aggregations of historical costs have no uniformity.

There are two basic ways in which balance sheets may be valued. The first, commonly used in business accounting, records data at acquisition cost and is frequently referred to as book value. The second employs current market values or some conceptually similar variant. The former method presents fewer problems of data collection and requires considerably less adjustment of data than the latter.

However, several factors must be considered before deciding upon an appropriate valuation, the most important of which are the usefulness of the end result for analyzing wealth, financial decision making and economic behaviour. The ability to obtain data in the required form and the compatibility of valuations throughout the system of accounts are also important.

ii) Current values or book values

Consideration of the above factors has generally led to a preference for current values rather than book values or acquisition costs. There is substantial

agreement that current valuation has more meaning than values which may reflect prices spread over the past twenty or thirty years, perhaps even longer in the case of particularly durable assets. Aggregates based on historical costs or book values are neither comparable over time nor between firms or sectors.

In defense of book values it has been stated that they are, in fact, used by most reporting units as their valuation basis and therefore are more easily collectible. More than that however, they do have some influence on firms' decisions concerning rates of return, tax liabilities and, in the case of certain utilities, on rate regulation. In addition, analytical financial ratios frequently employ published net earnings which in general still reflect book values.

However, current or market valuation has the advantage of being consistent, comparable between sectors, readily understandable and relatable to current income flows. In economic terms the relative market valuations of capital goods reflect the market's assessment of relative present values of future net income streams. Its implementation does, however, present some formidable challenges.

The generally accepted definition of market price is that which reflects a transaction between buyer and seller in which the two parties are dealing at arm's length and on a commercial basis. It is also implicit in the definition that the market is an orderly one and not one which is overloaded with buyers or sellers. This definition presents a hurdle insofar as many assets and liabilities to be revalued are not traded in markets where prices are frequently being set; for many there may be few, if any, transactions in the course of a year. Markets for many capital goods are severely restricted and in these cases it is necessary to resort to alternative measures to derive current valuations that are conceptually similar to market values.

The ideal situation is that in which quantity and price data exist on a current basis and quantities can be revalued each year using the appropriate current price. The best example of this exists in the stock market where large quantities are publicly traded, specific prices are quoted on a daily basis and buying and selling activity flourishes. A number of financial markets exhibit these characteristics and in such cases the current quantity times price method can be applied. Even in these near-perfect markets there are problems associated with the share valuation of non-traded and privately held companies.

iii) Reproducible fixed assets

The current valuation of reproducible fixed assets - housing, plant and machinery - requires a different technique as market prices of second hand capital goods are not normally readily available. The most common method of arriving at a current value, such as the written-down replacement cost used in the Canadian accounts, is through the perpetual inventory method. The method requires the accumulation of estimates of fixed capital investment, by type of asset and year of acquisition, over a period sufficiently long that all assets presently in the stock are covered. Any capital assets acquired before the date from which the accumulation of fixed capital investment estimates commenced should have been retired.

The stock of capital estimated as above is revalued each year, from its date of acquisition to the year under consideration, through the use of price indices. The application of suitable price indices to different types of assets produces an estimate of current gross replacement cost. The objective is to measure the cost of reproducing existing capital in terms of its physical characteristics and not the current cost of new fixed assets capable of producing an equivalent output. An allowance for the depreciation of assets based on their assumed useful life, also adjusted to current values, must be deducted to arrive at the desired net replacement cost of the stock of capital for each year. The estimate on an on-going basis is maintained by adding annual new capital formation, retiring used-up capital, revaluing past stock and deducting the current value of depreciation.

Matching price indices to capital goods presents considerable problems. Many items of capital are unique and most others are constantly in the process of being improved so that prices often reflect quality change rather than pure price. Nevertheless, the perpetual inventory method is the one employed in producing the data used in the Canadian national balance sheet accounts. Although other methods have been, or are in the process of being developed, these have so far not been employed. The best known alternatives are those based on current appraisals of property and equipment. Estimates have been prepared from both direct surveys of owners of fixed capital and indirectly from valuations by professional appraisers for insurance or tax purposes.

iv) Inventories

Two methods are employed in the Canadian accounts for valuing inventory change. Values for the change in farm inventories are obtained by multiplying numbers or quantities of livestock and crops by market prices or unit values. The process of valuing non-farm inventories is complicated and follows the procedures used in the income and expenditure accounts to convert changes in book values to value of physical change.

v) Consumer durables

The technique for deriving stock values of consumer durables parallels that for reproducible fixed assets. The perpetual inventory method utilizes aggregations of annual consumer spending on durables by type, estimates of useful service lives, depreciation patterns and prices. By combining these variables in the same way as in the fixed asset category, an estimate of the net stock of consumer durables can be deduced. A periodic check on the results obtained from the perpetual inventory method may be carried out when surveys of household ownership of

consumer durables are undertaken. Market price data are relatively plentiful for consumer durables.

vi) Renewable resources, depletable stocks and land

As the Canadian balance sheets include neither estimates for renewable resources, such as timber stands, nor depletable stocks, such as minerals and other sub-soil assets, the question of valuation has not had to be faced. It has been suggested that where such estimates are attempted, valuation be based on discounted anticipated future net earnings of the income producing assets. The procedure is complex and involves estimating production, costs, selling prices and the selection of an appropriate discount rate to convert projected income to present values.

The valuation of land, the final major non-financial asset, poses some difficult problems. First, there is frequently considerable difficulty in separating the value of land from that of the buildings erected on it; secondly, there are vast tracts of land for which there are no prices because no market exists - such is the case for much public land.

The recommended method for land on which no buildings exist is to apply current prices to quantities, assuming an active market and available current prices. Where land underlies buildings, valuation appraisals may be used to establish site to structure valuation ratios, which in turn can be used to estimate land values. If the appraisals are for years prior to the current period they should be updated to current prices. Appraisal values may have to be estimated for land that is infrequently or never offered for sale. In general, quantity figures for land are available and it is the price data that requires an innovative approach.

In the Canadian accounts, estimates are prepared only for agricultural, residential and commercial land; the value of all other land, including publicly owned land, is omitted. The method used to determine the underlying land value of residential and commercial properties employs site to structure ratios in conjunction with current values of the stock of residential and commercial properties. In the case of commercial property, including land owned by corporations, unincorporated businesses, non-profit institutions as well as some government land, the site to structure ratios are based on book values and their coverage is incomplete.

The general application of these book value based ratios provides, at best, a rather weak estimate that has been labelled as provisional in the Canadian national balance sheet accounts. The value of all privately owned agricultural land is based on census values of farms from which the net value of buildings is deducted. The separation of land and buildings is somewhat artificial given the interdependency of both components in creating a market value.

vii) Financial claims

The principle of current valuation is again generally recommended for financial claims. The application of the principle has different implications depending on the type of instrument. In the case of short-term instruments realizable at nominal or face value on demand or at short notice, book values and current market values are unlikely to diverge. For long-term claims, particularly bonds and corporate securities, market values are desirable for the sake of consistency as there may be significant differences between different holders' book values for the same instrument.

In practice, the Canadian accounts generally use book values for financial instruments; attempts to overcome the conceptual and practical problems associated with revaluing the bulk of long-term financial claims present major statistical difficulties. Theoretically the market price of regularly traded long-term bonds could be applied to the quantity outstanding, and, where bonds are not regularly traded and current transaction prices are not available, estimates could be made on the basis of quoted prices for bonds with similar market characteristics. Corporate shares could also be valued, in many instances, on the basis of quotations in highly organized markets, but there still remain those not listed on the exchanges. On balance it was felt that book values were a more satisfactory starting point in this segment of the balance sheet accounts, although some adjustments are made to the value of shares to bring them closer to current values.

The valuation of shares is unique to the system. Shares held as assets by reporting sectors (the personal sector is non-reporting) are valued in the Canadian accounts at cost at time of acquisition but when valued as liabilities the retained earnings and reserves are also included so as to better approximate market values. The impact of this is to place the residually derived asset share holdings of the personal sector on a close to market value basis.

A special situation exists in the Canadian accounts concerning the equity investment of a parent corporation in an associated company. The parent's ownership of capital stock in its associate is classified to a special asset category 'corporate claims', whereas the stock issued by the associate to the parent is classified as a share liability. This treatment is dictated by business accounting records and the fact that the extent of the parent's holdings of shares in its affiliate cannot be determined from accounting records alone. The equality of individual category assets and liabilities which holds true in the matrix for all other categories does not hold for the 'corporate claims' and 'shares'; assets and liabilities for these two categories are only equal when summed.

The Canadian system requires that each financial asset and liability, category be equal, with the exception noted above. In the case of discrepancies due to problems of coverage or valuation, data are scrutinised to determine the most likely cause, after

which the discrepancy is allocated to what is believed to be the appropriate sector. The procedure is not dissimilar to that which occurs in the input-output system in balancing the supply and disposition of commodities and it depends heavily on the knowledge and ability of the compiling statisticians.

Although only touching on the main topics concerning valuation of the nation's wealth, this section has indicated some of the difficulties. The question of valuation ranks highly amongst those affecting the measure of wealth since the final estimate is significantly affected by decisions regarding valuation choices. The Canadian balance sheet accounts, along with those of other countries, are still in the early stages of development with regard to finding satisfactory solutions to the many problems of valuation.

Sectors and asset and liability categories

The sectors and transaction categories used in the financial flows and the national balance sheet systems largely coincide. The reader who is interested in a brief description of sectors and categories constituting the balance sheet framework is referred to the earlier part of this chapter dealing with the financial flows. The following is primarily concerned with some general observations about the sectoring and the units best suited for sectoring balance sheet material, plus some comments on the categories used to classify balance sheet items.

a) Sectors and units of classification

As previously noted, no one set of sector definitions is suitable for all purposes and for all countries. The evolution of sectors in the Canadian financial accounts reflects the institutional development of the country and to some extent the availability of data. At the most aggregate level the sectors are institutional and can be linked directly with those in use in most other components of the Canadian system - persons and unincorporated business, corporate and government business enterprises, government and non-residents.

In the financial system, the structure of sectoring goes beyond the basic criterion of grouping all units with similar patterns of behaviour and motivation into four basic sectors. At least two other criteria are applied. The first is ownership and the second is type of activity. The application of the first guideline produces a sub-sectoring of the corporate and government business enterprise sector into private and public enterprises; the second extends the sub-sectors into financial and non-financial, with further subdivision of financial units according to type of service provided or activity undertaken.

The greater detail increases the analytical usefulness of the balance sheet accounts but it also increases the problems of correctly allocating reporting units to single sectors when they are involved in a number of activities. It also raises issues that are largely absent when dealing with the four main institutional sectors alone, such as defining the unit to be allocated to sectors, and the degree to which combined or consolidated balance sheets are preferable. The two issues are interwoven to the extent that if the unit is, say, the enterprise, financial transactions and balance sheets will automatically contain a degree of consolidation.

The transactor units used in the different components of the System of National Accounts vary according to the data needs of the particular system and their analytical usefulness. There is a class of business unit suitable for compiling data on production and associated types of data for input-output and industrial systems and one more suitable for providing analytically useful data relating to capital and financial transactions for the income and expenditure and financial systems. The former is the 'establishment' unit and the latter, the legal corporation or the enterprise.

Three arguments in favour of using enterprise or family of corporations units for balance sheet accounts are that transactions between members of the same family which may have little economic significance are consolidated out; financial decisions tend to be made on the basis of the overall operations of an enterprise rather than on the basis of separate legal entities within the enterprise; in the case of unincorporated businesses and their owning households, considered as family units in this context, separate financial records and decisions frequently cannot be distinguished.

Two practical disadvantages have been raised against using the enterprise or family of corporations as the unit. The first is that it is not a universally recognized unit for data collection or compilation, and secondly an enterprise frequently engages in a number of different activities so that its allocation to one sub-sector blurs the sector boundaries.

In the Canadian accounts, sector balance sheets mainly relate to individual corporations and their totals reflect combined rather than consolidated balance sheets. This means that many financial claims between commonly controlled families of corporations are included in the results. The decision to use the legal entity as the reporting unit was based on the general availability of data, although in some instances data are available on a consolidated basis.

Sector balance sheets are also combined rather than consolidated in the sense that they reflect claims of corporations on other unrelated corporations classified to the same sector. This also applies to government units forming the various public sectors. In the federal government sector, for example, a part of Government of Canada treasury bill and bond liabilities are recorded as asset holdings of units belonging to the same sector. Intra-governmental department claims are however consolidated out in the sector balance sheets.

b) Asset and liability categories

The definition and valuation of financial assets and liabilities have already been discussed and this

section is mainly concerned with non-financial assets and certain aspects of financial claims peculiar to balance sheets. National balance sheet accounts are regarded by many users as synonymous with national wealth estimates and may largely be used in this context. To the extent that they are so used, financial claims become largely irrelevant and attention is focussed on non-financial assets.

i) Non-financial assets

The distinguishing characteristic of wealth and the source of its value is its ability to contribute to future income flows through direct or indirect production of goods and services. Canadian national wealth estimates are restricted in the above sense for practical reasons and only reproducible fixed assets, inventories and consumer durables, plus land used for agricultural, residential and commercial purposes are included. Public land, depletable and renewable natural resources, and non-financial intangibles like trade marks, patents and copyrights and human capital are omitted.

The valuation of fixed capital stock in the balance sheet accounts is net of depreciation and covers construction and machinery and equipment. Costs associated with construction, such as architectural fees and the value of work done on site development, land development and the extraction of natural resources are considered to add to national wealth. Military equipment and buildings are not included in the wealth estimates with the exception of residential accommodation built for military personnel. The fixed capital and inventory stock series are conceptually consistent with the investment flow series that appear in the financial flow and income and expenditure accounts.

Residential capital stock includes private and public dwellings, fixed structures and mobile homes, as well as any equipment normally considered an integral part of the structure, such as air conditioning and heating systems. Ancillary buildings and structures in the nature of garages and swimming pools form part of the estimate. The net valuation is based on a gross estimate less allowances for demolished buildings and depreciation of the existing stock on the basis of a fixed annual percentage.

Non-residential capital stock includes buildings such as factories and office buildings and all types of engineering construction including roads, dams, bridges and transmission lines. The net valuation is again derived by deducting losses in value through physical deterioration and obsolescence from gross stock estimates. In the context of net capital stock estimates, the wear and tear on an asset is assumed to occur evenly over its life-span - the 'straight-line' depreciation method.

The estimation of net capital stock involves a number of points at which there may be conflicting viewpoints. There may be different views on the merits of measuring capital on a gross or net basis - the former may be more appropriate for productivity studies and may in fact be more accurate. If net capital is the preferred option there may be different opinions on the manner in which depreciation should be calculated.

Increments to fixed assets normally occur through new production, but there is an important exception for imports of second hand equipment and material. In this case, the purchase of used equipment constitutes a net addition to the stock of wealth of the country.

Domestic sales and purchases of existing fixed assets are reflected in national balance sheets only to the extent that they involve some net addition to the stock of wealth through the capitalized value of legal fees and real estate commissions involved in the transfer. Sector balance sheets do however show transfers between sectors due to these sales and purchases.

The wealth estimates include the value of inventories of raw materials, goods-in-process and finished goods. For balance sheet purposes such stocks are valued at current market prices and not at the book values more normally used in business accounting records. Wealth in the form of inventories is somewhat different from other components in the sense that it is working capital, and is physically consumed in the production process. The level of stocks are directly affected by changes in the level of production. Fixed assets are not directly consumed in production, nor do changes in production have a residual impact on fixed assets.

National balance sheets are the only branch of the System of National Accounts to treat certain consumer goods as part of the wealth of the country. The estimate includes the net stock of consumer durable goods considered to yield a service to the consumer for a period in excess of a year. Automobiles, household appliances, furniture, carpets and other floor coverings and recreational equipment constitute the major part of the stock figures. The perpetual inventory method used to estimate fixed assets was also ,used for consumer durables including estimates of assumed service lives and 'straight-line' depreciation.

The value of land is the final component of the present wealth estimates contained in the balance sheets. The coverage is restricted to privately-owned agricultural and residential land, plus commercial land including some government land. This component of the wealth estimate, because of its developmental nature

must still be regarded as provisional. As noted in the section on asset valuation, residential and commercial land stock estimates are based on ratios of land to structure values applied to the total value of structures. Values of privately owned agricultural land are derived by deducting the value of farm buildings from the total capital value of farms estimated from census data. Direct measures of quantities of land multiplied by current market prices are not available.

ii) Financial claims

National balance sheet accounts, like financial flow accounts, deliberately omit certain financial claims normally found in business accounts. Contingent liabilities, for example, are excluded on the grounds that they are uncertain and have no counterpart entries on anyone else's books.

Claims fixed in foreign currencies are converted to Canadian dollars for balance sheet purposes. The translation is carried out at the exchange rate in effect for the current period, so that although no revaluation for change in the market price of the foreign currency instrument itself is introduced, the value of the instrument reflects changes in exchange rates.

The life insurance and pensions category is one of the most important in the balance sheet and requires some words of explanation. The item appears as a personal sector asset and as a liability of the life insurance and pension funds sector. The estimate represents the net equity of households in life insurance reserves and pension funds, and its treatment in the balance sheet accounts is in accord with that afforded it in the rest of the system where the reserves held against life insurance policies and pension arrangements are regarded as wealth belonging to persons.

The estimate is restricted to claims on funded plans and no estimates are made for general government social security pension plans. It could reasonably be argued that individuals' behaviour may be equally affected by unfunded as by funded pension schemes and that net equity in the former should appear as part of the personal sector's wealth. The different treatment hinges, at least in part, on the lack of earmarked assets or an adequate measure of equity in the case of unfunded schemes.

The quality of the financial assets and liabilities estimates may be compromised because counterpart asset and liability entries will be out of balance when the issuer and holder strike their balance sheet statements at different dates. Even if balance sheets relate to the same date, the time at which a single transaction is recorded in the books of borrowers and lenders may differ, giving rise to the well documented 'float' problem. In some situations, particularly in the personal sector, no balance sheets are ever struck by the household sector so that direct collection of data is exceedingly difficult.

Other features of the national balance sheet accounts

Apart from the basic balance sheet presentations which serve as data bases and analytical tools, a major feature of the accounts is the reconciliation table. This table provides information on the causes of changes in balance sheet levels from one year's end to the next. Because it provides the link between financial flows and balance sheet accounts it has already been described in the conclusion to part I of this chapter covering financial flows.

In addition to providing the link between flows and levels, the reconciliation account is of interest in its own right as an integrating device and analytical tool. The table shows changes between opening and closing balance sheets divided between those attributable to financial flows and those that are not. Changes not attributable to financial flows are sub-divided into a number of different categories, the most important of which is that change in the value of assets and liabilities outstanding due to price movements.

Revaluations due to price change arise for a number of reasons. The revaluation of the stock of fixed capital and consumer durables to current replacement costs each year results in substantial unrealized capital gains during periods of rising prices. The application of market values to those assets sold between opening and closing balance sheet dates automatically results in a revaluation when there is any difference between opening balance sheet valuation and market price. A third significant revaluation results from exchange rate fluctuations - the translation of securities denominated in foreign currencies into Canadian dollars at current exchange rates frequently yields significant unrealized gains or losses.

The valuation of shares in the balance sheet results in changes which differ considerably from financial flows. The difference is categorized as conceptual in the Canadian reconciliation table, although it might well be viewed as a revaluation since the addition of retained earnings to the value of issued capital stock in the balance sheet valuation of shares is a proxy measure for the market value of shares.

The significance of the revaluation estimate in the reconciliation accounts is that it provides, for the first time in the framework of the national accounts, some rough assessment of the increase or decrease in wealth attributable to price change. To the extent that the holders' economic behaviour is affected by a perception of net worth in current market prices, the annual revaluation estimate may lead to a, better understanding of production, consumption and changes in saving rates.

The reconciliation account also furnishes data on changes in sectors due to take-over activity, the resectoring of units due to privatisation, and the recording of unforseen events. In the event that the Canadian balance sheet accounts should include estimates of the value of renewable and depletable natural resources, the

reconciliation account would have to record the value of net new findings of sub-soil assets and the growth and depletion of timber lands and commercial fisheries.

A positive aspect of the reconciliation account, easily overlooked, is the assistance and discipline it provides to producers of national accounts. The enforced cross-checking and documentation of procedures and events required to complete the reconciliation account undoubtedly improves the accuracy and reliability of both the flow and stock accounts.

Uses of the national balance sheet accounts

Because of the relatively recent development of the Canadian balance sheet accounts, there are as yet few practical examples of the use of the accounts. Experience in other countries, however, suggests a number of potential uses.

The present structure of the accounts constitutes a compromise between a general and specific purpose set of accounts, and between a conceptually pure and a statistically feasible framework. The accounts in the end are designed both to integrate with the other components of the Canadian system and to satisfy as broad a range of uses as possible. It can be argued that the range of uses would be expanded if greater detail were provided, for example, both historical cost and current market price valuations, but this development must await further research.

The principal analytical uses of the accounts involve studies of structure and relationships. Estimates of the total wealth of the country classified by assets and sectors provide the background for structural analysis of strengths and weaknesses of the country. For example, they permit an assessment of the stage of development of financial markets, they provide data for gauging the importance of foreign capital in the country's development, they allow international comparisons of the role of capital in the stage of development of a country and they provide the background against which future financial requirements can be projected.

One of the most common uses is that in which both the stock of capital and the production flows are studied together and capital-output ratios are established. The role and productivity of capital is one of the most important determinants of the economic well-being of a country. Combined with other factor inputs, total factor productivity measures provide a tool used in studies of efficiency or in the development of policies for increasing productivity.

More emphasis is also being placed on balance sheet analysis, not only for purposes of understanding changes in balance sheets brought about by investors' profit optimization portfolio adjustments, but because sectors' spending and saving decisions are, to some extent, the result of the relationship of their income to the composition of their balance sheet holdings.

A further widespread use of balance sheet data involves the establishment of ratios for balance sheet items, and between balance sheet items and other financial data. Behaviour is often influenced by attempts to maintain certain ratios. For example, in the case of non-financial business units, the ratio of current assets to liabilities and stocks to sales are considered important indicators of business health. There is also considerable interest in such relationships as consumer debt outstanding to personal disposable income. Financial institutions strive to maintain certain reserve and liquidity ratios. The preparation of the national balance sheet accounts, with full coverage and consistent definitions, permits a rigorous analysis of ratios for all sectors and sub-sectors.

National balance sheet ratios that portray certain aspects of a country's financial development include the ratio of financial to tangible assets and of intermediaries' financial assets to total financial assets. Other ratios of economic interest that have been suggested are debt to asset ratios and net foreign investment to total national assets.

The provision of national balance sheet accounts, used in conjunction with other components of the System of National Accounts, should open the door to increased research and understanding of the complex relationships that exist between the real world of production and the paper world of finance.

Links and reconciliation with the international investment position

National balance sheet accounts are linked directly with the financial flow accounts, the former representing stocks generated to a large extent by the cumulation of past flows recorded in the latter. Any differences in concepts, valuations and classifications between the balance sheet and flow accounts were described in the final section of part I of this chapter.

This section focusses on one of the least known and recognized links in the system of national accounts, that which exists between the rest of the world sector in the balance sheet accounts and the international investment position statement. Both these record levels of financial assets and liabilities, deal only with claims existing between residents and non-residents, and are balanced by a net foreign claims figure.

There are several difficulties in recognizing the link. The classification of financial instruments, or categories, is quite different and not easily reconcilable. The two systems view the accounts from different perspectives: the rest of the world sector account in the national balance sheets views investment in Canada by non-residents as an asset and borrowing as a liability, while the international investment position statement records non-resident investment in Canada as a liability and resident investment abroad as an asset. The international investment position is not always recognized as having the same relationship to the balance of payments as national balance sheets have to the financial flows (Canada's international investment position is based essentially on cumulations of past balance of payments net capital transactions plus net retained earnings).

Detailed reconciliation between the two systems can only be done at the worksheet level, with extensive rearranging and regrouping of assets and liabilities. The

classifications and terminology employed in the international investment position statement are those used in balance of payments statements and recommended by the International Monetary Fund statistical manuals. The balance sheet classification system is quite different.

The reshuffling of primary source material to fit both systems involves grossing up some items that appear on a net basis in the international investment figures to meet balance sheet requirements, combining or sometimes sub-dividing types of financial assets and liabilities to fit different classification systems and, of course, transposing asset and liability categories.

The different classification categories for assets and liabilities in the two systems arises largely because of different analytical uses of the data. Balance sheet claims are primarily classified by type of instrument and with a range sufficiently great to encompass the claims of the various sectors and the entire nation. International investment data are classified more according to behaviour or motivation. To facilitate the analysis of Canada's international financial and economic position the classification puts more emphasis, for example, on whether the long-term investment is for the purpose of establishing management control or is of a portfolio nature.

The direct investment liability category in the international investment position statistics provides a good illustration of the difficulties of recognizing the link between the two systems. In the rest of the world sector of the balance sheet accounts the item is recorded as an asset, and enters into a category labelled 'corporate claims on associated enterprises'. This classification category includes a number of other forms of investment in addition to direct investment, such as equity of non-residents in Canadian investment abroad through their ownership in Canadian enterprises and non-resident investment in Canadian chartered banks. The reconciliation can only be accomplished with access to worksheet material.

Because the primary source material underpinning both accounts is identical, the reconciliation problems are classificational rather than statistical. Occasionally, differences occur over short periods when the revision policies of the two systems are not fully synchronized. The gross figures also reflect different degrees of netting in the two systems but in both the overall net international investment position figure is the same. Difficulties normally experienced in linking two independently derived estimates, such as valuation and coverage problems, are absent because of the use of corresponding data.

Chapter 6

Balance of Payments and International Investment

I - Balance of payments

General

a) Availability

The official annual Canadian balance of payments estimates begin with the year 1926. The framework and statistical series evolved as economic, social and institutional changes occurred, causing discontinuities between the series as published in the earlier and later time periods. However, in recent annual reports, an attempt has been made to provide official series from 1926 on a consistent basis and in the current format. Quarterly estimates have been available since 1953.

The most recent detailed description of the development of the balance of payments and international investment position statistics appears in 'Canadian Balance of International Payments and International Investment Position - A Description of Sources and Methods', Statistics Canada, Catalogue 67-506.

b) As part of the Canadian System of National Accounts

The balance of payments accounts predate all other components of the System of National Accounts and, as such, stood alone as an analytical tool for many years. Although an integral part of the overall system, it is to many ways quite different from the other components. Unlike the input-output, income and expenditure and financial flow accounts which lead into each other, with the final stage of one set of accounts providing the opening stage of the next, the balance of payments runs parallel to all three systems, feeding information about international transactions into all parts. The schematic diagram on page 13 illustrates the relationship of the balance of payments to other parts of the system.

International transactions are grouped in the balance of payments into two basic accounts, current and capital. The current account distinguishes transactions in goods, services, investment income and transfers (no distinction is made between capital and current transfers); the capital account covers investment and other transactions in financial claims, including transactions in official international reserves. The balances registered in the two accounts should in principle be of equal size and opposite sign. If the current account records exports in excess of imports (receipts greater than payments), the capital account should show an equivalent amount of net foreign investment through the acquisition of foreign financial assets, including Canada's international reserve holdings, and/or reduction of liabilities.

c) Principles and concepts

The accounts record transactions between residents and non-residents of Canada. The primary criterion for deciding whether a transaction belongs in the balance of payments is the residency of the two transactors. It is important not to confuse residency with citizenship. For example, transactions between two Canadian citizens, one living in Canada and one abroad, constitute relevant entries for the balance of payments, whereas transactions between a Canadian and a U.S. citizen both residing in Canada are not relevant. The question of what determines resident status will be discussed later.

The current account, which records transactions in goods and services, factor income flows and transfers, is in principle compiled when ownership change takes place or service is rendered. This payable/receivable guideline is in conformity with the other components of the national accounts which are, in general, on an accrual rather than a cash payment basis.

The Canadian accounts attempt to reflect the value of a transaction at the price at which settlement occurs. This may differ from what is normally thought of as being the equivalent of a market price in the national accounting sense, that is, the amount of money that a willing purchaser pays to a willing seller at arm's length. Any general attempt to apply a notional market price would give rise to major practical difficulties. There are many transactions for which no market prices exist, such as those between affiliated companies in an enterprise, gifts and other unrequited transfers. There are also a multiplicity of times and values used in the business world to record a transaction so that reported data may refer to a contract date, shipment date, delivery date or customs clearance date, and valuations range from producer cost, purchaser price, transfer price between affiliates, or valuation for custom duties. Attempts to apply a uniform valuation are not feasible and with few exceptions the Canadian accounts accept reported valuations.

The unit generally used both for reporting basic data other than merchandise and for compiling balance of payments tables is the enterprise. The scope of the enterprise is restricted to its consolidated Canadian operations so that all transactions with non-residents, both related and unrelated are reported. Because of the focus of the accounts and the lack of industrial detail in the balance of payments, the enterprise is the logical choice as the unit best equipped to provide required data.

The fact that Canadian dollars are the unit of account in the balance of payments presents some

conversion problems when transactions are denominated in foreign currencies. The difficulties relate to the choice of an exchange rate that corresponds with the timing of the transaction and to the application of the same exchange rate to both sides of a transaction.

Conversions are carried out on the basis of daily exchange rates in the case of such series as merchandise imports, monthly averages where the data are reported only on a monthly basis and quarterly averages when knowledge of the date of the transactions is imprecise. For those transactions derived from opening and closing stock figures, particularly short-term capital and official reserves, attempts are made to calculate transactions from balances in original currencies so as to eliminate valuation changes due to exchange rate movements.

The capital account is used to record transactions in financial claims on and liabilities to non-residents, as well as investment in tangible assets. Conventionally, in the balance of payments and the non-resident sector in other components of the national accounts, investment in physical assets is recorded as a financial transaction and included in the category 'other claims'. It is treated as if the trans-border transaction was a loan and a notional unit in the receiving country undertook the investment in tangible assets on behalf of the foreign investor.

The accounts are constructed on the principle of double-entry book-keeping. Every transaction involves a credit and debit entry. Credit entries carry a positive sign and cover the export of real resources such as goods and services, investment income receipts, and transfers received. In the capital account credit entries include the sale of assets to non-residents and borrowings from non-residents. All credit entries represent inflows of funds. Debit entries, which carry a negative sign, include imports of goods and services, investment income payments and transfer payments; acquisitions of foreign assets and payments of liabilities are debit entries and represent outflows of funds.

The fact that each transaction requires offsetting credit and debit entries ensures a theoretically balanced system, but because the two entries are normally derived independently, timing, coverage or valuation differences inevitably create some imbalance in the system. When this occurs, the accounts are balanced artificially with a statistical discrepancy item. In a perfect system, for example, exports of a shipload of grain would result in a positive entry under merchandise exports and an exactly balancing negative entry, normally in the capital account, showing the payment received either in the form of an acquisition of a foreign asset or a payment of a liability. The specific entry might be an increase in a foreign bank deposit account, or alternatively, the payment might be applied to reducing a loan from a foreign bank.

The offsetting entries are not necessarily split between the current and capital accounts. Many transactions result in entries which both appear either in the current or the capital account. In the case of foreign purchases of Canadian government bonds, where the resulting inflow of funds is used to build up international reserves, both entries are of a capital nature.

A distinction should be made between transactions as measured in the balance of payments and a record of foreign payments. The two are sometimes confused. Some entries conventionally recorded in balance of payments statements call for no payments in the traditionally accepted sense of the term. These include such transactions as the monetization of gold produced domestically which when held by the central authorities is considered the equivalent of a foreign financial asset; transfers in kind for which there is no quid pro quo; and the shipment of goods or services between affiliates in which the settlement is effected by contra book entries.

The Canadian balance of payments does not include retained earnings of Canadian direct investment abroad, nor that of foreign direct investment in Canada as receipts and payments in the current account. In some countries they are recorded as if they were actually paid or received and then reinvested in the affiliate; despite the fact that no funds cross the border, notional transactions are recorded in investment income in the current account and in direct investment in the capital account.

Apart from classification differences, the balance of payments capital account reveals the same underlying characteristics as the financial flow accounts. Transactions in financial assets and liabilities reflect the flow of funds during an accounting period and not changes between opening and closing statements of the level of holdings. The net capital flows represent the saving or dissaving on account of current transactions translated into lending or borrowing in financial instruments.

The capital account net balance is in principle equal but opposite in sign to the surplus or deficit on current account and in the minds of many users is associated with the financing of the exchange of goods and services. However, the account also reflects financial activity only remotely connected with production and the current account. There may be considerable capital movement for investment and speculative purposes. These may show up as offsetting flows including foreign exchange reserve movements.

A number of factors which change the net indebtedness of a country are not recorded in the balance of payments accounts. Canada's external assets and liabilities may change due to reclassification of assets and liabilities, valuation adjustments, the effects of exchange rate variations, the impact of retained earnings and territorial changes. The items are similar in nature to those recorded in the

reconciliation of financial flow and balance sheet accounts.

The schematic presentation of the Canadian System of National Accounts on page 13 illustrates the interrelationship of the balance of payments with the other components, while the format of the summary table of the Canadian balance of payments with figures for the year 1981 is shown in Table 5 on page 74. The table consists of standard components that have been agreed to internationally. The current account includes merchandise, travel services, freight and shipping services, business services, government transactions, investment income and transfers. The capital account distinguishes direct investment, portfolio investment, Government of Canada claims including official international reserves, other investments abroad, liabilities in the form of money market instruments, Canadian banks' net foreign currency borrowing or lending abroad, and the allocation of Special Drawing Rights.

d) Balances in the accounts

The striking of analytical balances in the accounts has been the subject of much discussion. The number and the choice of balances a country may wish to focus upon is a matter of what are considered relevant for interpreting, monitoring and developing policy in the field of international economic relations. There are a number of balances commonly calculated by most countries.

The balance on goods, services, investment income and transfers, known as the current account balance, is in fairly general use and represents transactions that increase or decrease a country's wealth vis-a-vis non-residents (apart from valuation changes, etc.). A surplus or deficit on current account does not in itself indicate a desirable or undesirable situation for any country at a particular point in time; the balance has to be seen in the light of other factors before an assessment can be made.

The current account balance is frequently augmented by what is commonly referred to as the 'basic' balance. The intention is to look at the balance emanating from transactions that are unlikely to be reversed in the near future. In striking the basic balance, long-term capital inflows and outflows are combined with the current account balance to provide a better indication of underlying trends in the economy's international transactions. The difficulty with such a balance is that it ascribes a motivation to capital flows which cannot be known from the statistics alone.

Balances for individual items are of analytical interest and often form part of the standard balance of payments presentation. The most important of these is probably that relating to merchandise transactions, although for countries heavily dependent on tourism the balance on travel account may be of greater interest.

Extending the statistical analysis of the economy

The balance of payments statement is essentially a one sector account in the sense that it is entirely focussed on Canada's relations with the rest of the world. To this extent one might ask what it adds to the non-resident sector accounts embodied in the income and expenditure and financial flow accounts. The answer is a comprehensive presentation, greater detail and a different perspective. The balance of payments brings together all transactions with non-residents in one package and does not sub-divide them into those associated with current production, income flows and financial assets and liabilities. In addition it provides an enormous range of data on international transactions not available elsewhere.

Although summary statements appear in other branches of the System of National Accounts, the balance of payments is a primary source for many statistics of international transactions (an important exception being merchandise trade). The accounts provide the only comprehensive picture of the importance of international transactions to the compiling country, not only revealing the structure and relative strength and weakness of the goods and service components, but suggesting the degree of sophistication of the economy in its financial transactions with the rest of the world.

The remainder of this section describes in some detail the transactions recorded in the current and capital accounts. Because of the importance of the resident/non-resident distinction to the entire balance of payments concept the section also contains the Canadian working definition.

a) Transactions recorded in the current account

The classification system used in the balance of payments stems largely from a traditional or conventional, rather than theoretical, base. The categories usually shown relate to groupings of similar transactions, important in the context of international trade and analytically useful. The categories follow a traditional split common in other systems of the accounts of goods, services and income.

The internationally recommended sub-division of services is unique to the extent that it is a classification of groupings which are of general importance in external transactions. For example, the travel service account is more in the nature of an economic or analytical classification, combining the outputs of several industries and commodities.

The data are normally presented on a gross basis. Both exports and imports are shown rather than only the net flow, on the principle that to a large extent the credit and debit entries are unrelated and net figures mask the importance of international trade in the compiling country's economy.

The separate identification of income flows, sometimes referred to as factor services to indicate that they relate to flows associated with factors of production, is essential in providing a bridge between the balance of payments and the national and domestic concepts employed in the other accounting systems. As already noted, national product includes

TABLE 5. Canadian International Balance of Payments 1981

Billions of dollars

Current Account	
Receipts	
Merchandise exports	84.4
Services	12.4
Sub-total	96.8
Investment income	4.0
Transfers	3.1
Total	**103.9**
Payments	
Merchandise imports	77.1
Services	15.9
Sub-total93.0	
Investment income	15.3
Transfers	1.7
Total	**110.1**
Balance on current account	
Merchandise	7.3
Services	-3.5
Investment income	-11.3
Transfers	1.4
Total	**-6.1**
Capital Account	
Claims on non-residents, net flows	-18.4
Direct investment abroad	-6.9
Portfolio securities	-
Official international reserves	-0.4
Government loans and subscriptions	-1.4
Non-bank deposits and other claims	-9.7
Liabilities to non-residents, net flows	33.0
Foreign direct investment in Canada	-4.4
Portfolio securities	10.9
Canadian banks' net foreign currency position	17.4
Money market instruments	1.2
Allocation of SDRs	0.2
Other liabilities	7.7
Balance on capital account	14.6
Statistical discrepancy	-8.5

Feeds into input-output tables and into main income and expenditure tables as well as the non-resident sector account. Minor differences due to classification of transfers.

Aggregate net flows feed into the rest of the world sector in financial flows. Individual items are all reclassified for flows system.

Canadian International Investment Position - Year End 1981

Billions of dollars

Assets	
Direct investment abroad	33.8
Portfolio investment	9.2
Official international reserves	5.2
Government loans and subscriptions	12.0
Non-bank deposits and other claims	28.2
Gross assets	88.4
Liabilities	
Foreign direct investment in Canada	66.6
Portfolio investment	83.2
Non-resident equity in Canadian assets abroad	10.8
Canadian banks' net foreign currency position	25.3
Non-resident holdings of Canadian dollars	6.6
Allocation of SDRs	1.1
Other short-term and miscellaneous	25.1
Gross liabilities	218.7
Net international Investment Position	**-130.3**

Feeds into rest of the world sector in National Balance Sheets

Value changes in successive years result from capital account flows + revaluations of assets and liabilities and other reconciliation items, such as reclassification of instruments

Due mainly to the *net* treatment of banks foreign currency assets and liabilities in this table, and *gross* treatment in National Balance Sheets, figures in the two systems differ.

the output of residents produced both in the domestic economy and abroad less the output of non-residents produced in the domestic economy. Factor income receipts recorded in the balance of payments measure the value of production abroad of residents while payments measure the output produced in the domestic economy by non-residents; their separate identification is critical to the overall System of National Accounts. The Canadian accounts at present only include investment income in this category; other small amounts of factor service payments and receipts are not identified.

i) Merchandise trade

The merchandise account covers transactions in moveable goods in which ownership changes between residents and non-residents. The account presents only summary figures adjusted to fit balance of payments concepts and geographical areas; detailed commodity and geographic distributions of external trade figures are not included as these are available from other sources. In the case of merchandise trade figures the balance of payments is a user of existing series rather than a prime source, its more usual role.

The primary source for data are customs documents processed when goods cross the national frontier. In principle, exports are valued at the point of shipment and before the addition of inland freight, insurance and handling charges, while imports are valued at fair market value in the last country of shipment (normally the wholesale level). As with exports, the customs valuation excludes inland freight from the point of consignment to the foreign port of exit, insurance and handling charges. In practice it has been determined that some export values are reported inclusive of freight and insurance costs and these are adjusted out of the totals for balance of payments purposes; they more correctly are classified as services.

Certain exceptions are made in applying the general definitions covering merchandise trade. Some apply to the change of ownership rule; for example, transactions between related units where no legal change in ownership occurs are nevertheless included in trade, as are goods leased on a financial type lease. There are also examples of goods not crossing international boundaries that are included and by contrast, goods crossing boundaries that are excluded. For example, ships, aircraft and drilling rigs may not cross frontiers but ownership changes occur and they are included in the figures, whereas such items as goods crossing frontiers temporarily for art exhibitions, trade shows, repair and processing or construction projects are excluded.

A number of adjustments are made to the merchandise figures compiled from customs documents to adapt them to balance of payments concepts. The adjustments are made with the objective of placing trade figures on a consistent and compatible footing with other balance of payments measures and to avoid duplication or omission of items. The adjustments are classifiable into three types - coverage, valuation and timing.

Examples of the adjustments are: a deduction from exports of foreign tourists' Canadian purchases which are classified to the travel account; the addition of imports and exports of ships which may not be documented by customs normal methods; the removal of automotive special tooling and other charges included in trade figures which are more appropriately classified to business services; the substitution of progress payments on the construction of ships, civil aircraft and some military equipment for actual deliveries; and the raising of export values to allow for reporting undercoverage and adjustment for differences between the U.S. import customs values and Canada's export customs values as revealed by reconciliation studies with United States trade data. The above represent illustrative examples only; for a full account see, 'The Canadian Balance of Payments and International Investment Position - A Description of Sources and Methods', Statistics Canada Catalogue 67-506.

ii) Travel

Receipts and payments on travel account comprise the sale of goods and services to foreign visitors to Canada and the purchase of goods and services by Canadian visitors abroad. The account includes fares received by Canadian carriers for the transportation of non-resident visitors to Canada and payments by residents for international travel on foreign carriers. The treatment in the Canadian accounts differs from some countries to the extent that transportation costs associated with passenger travel are not assigned to a separate transportation account.

The coverage extends beyond the normal definition of visitor and includes not only traditional excursionists and vacationers and business visitors, but students visiting for less than a year, seasonal workers and residents, crews, persons visiting for medical care, transit passengers who clear customs, diplomats and military personnel and their dependents travelling to a posting for less than a year.

iii) Freight and shipping

This account covers receipts of Canadian-operated carriers from transporting Canadian exports, or carrying foreign owned goods in transit through Canada or between foreign ports, plus receipts for chartering vessels to non-residents, plus the spending of foreign carriers in Canada, other than airline expenditures which are included in the business receipts account.

Payments include the costs of transporting imports to Canada by foreign carriers, the cost of transporting Canadian goods (in particular oil and natural gas) in transit through the United States or in Canada by foreign carrier, the costs of chartering non-resident carriers, plus the purchases made abroad by Canadian resident carriers, other than airlines whose expenditure is included in the business account. Freight costs on imports carried by Canadian carriers and on exports carried by foreign carriers are not relevant entries for balance of payments as they normally constitute a resident/resident or a non-resident/non-resident transaction.

The account covers carriage by ocean going and inland water vessels, aircraft, trains, trucks and pipelines. Bunker supplies and stores are included in this account, although they might equally well be classified as trade in goods. In most cases handling and loading charges are also included in the account.

iv) Business services

The service account provides a wealth of original data on transborder purchase and sale of business services, with data being published for sixteen separately identified categories. The services cover those associated with particular types of industry such as the transportation or computer industries; services provided by an individual or corporation and based on specific skills such as legal, accounting, engineering etc; a generic type of service like research and development that may relate to any industry or skill; payments or receipts for some rights or privileges such as royalties, patents, trademarks, franchises, etc. The classifications used are pragmatic rather than fitting an overall theoretical frame. The detailed services appear regularly in the balance of payments publication and in "Canada's International Trade in Services", Statistics Canada, Catalogue 67-203:

v) Government transactions

Transactions include expenditures of the Canadian governments abroad and the receipts from expenditure of foreign governments in Canada. The type of expenditures included are those related to the maintenance of diplomatic, military and commercial representation abroad, and payments to international organizations. Costs of maintaining representation abroad include the wages and salaries of locally employed staff but not those of staff posted from the home country.

The series by no means cover the entire range of government transborder transactions. For example, interest flows, trade in defence equipment and materials, government official travel and government pension payments all appear in different accounts.

vi) Other services

This account is a catch-all for services that do not fit the more specifically defined accounts. Resident/non-resident transactions included relate to educational, cultural and entertainment services, gross earnings of short-term migrant labour and current transborder flows associated with trade union operations.

vii) Investment income

This section elaborates on the introductory comments to the current account on the importance of investment income estimates for determining national and domestic aggregates throughout the System of National Accounts. The account covering interest, dividend and miscellaneous investment income flows between Canada and the rest of the world includes the earnings of branches of Canadian companies located abroad and foreign owned branches operating in Canada. Also included are net revenues and expenditures of Canadian banks with non-residents, including the profits of their foreign affiliates; net revenues from abroad of Canadian insurance companies, including profits of foreign branches, and net payments to foreign insurance companies, including profit of their Canadian branches. Much of miscellaneous investment income is made up of interest and dividend flows; the separate classification of this item is largely one of historical accident.

The investment income account does not measure factor payments and receipts as defined precisely in the System of National Accounts and as required for the purpose of moving between domestic and national concepts. It includes some service payments built into the banking and insurance investment income estimate through the estimating technique and excludes some factor income flows. Such flows include short-term migrant workers' earnings, daily commuter workers' earnings and income accruing to the owners of patents, copyrights and other intellectual property. The factor income series is not one normally associated directly with the balance of payments account but is derived from it and is highly important in the overall framework of the national accounts.

The account is symmetrical insofar as the treatment of withholding taxes is concerned. Investment income payments are recorded gross of withholding taxes and such taxes are recorded as transfer receipts on the opposite side of the accounts. In the case of receipts, attempts are also made to record the figures on a gross basis but the exercise is more difficult because of data sources and availability. The account therefore, attempts to adhere to the principle of recording gross rather than net figures and to make explicit the appropriate entries for the sector accounts of the income and outlay accounts.

The Canadian accounts depart from recommended international practice with regard to the investment income estimates. At present only dividends actually remitted are entered in the account. The recommended practice, and that followed by some countries, is that retained or undistributed earnings of foreign direct investors should be shown as outflows in proportion to their equity participation and unremitted earnings of direct investors abroad of the compiling country should be included as inflows. The Canadian accounts do however show stock dividends paid out of retained earnings as part of the investment income account, even though this transaction may only involve a book transaction.

Including unremitted earnings as a flow in the current account would require an offset in the direct investment category of the capital account to maintain the balance. The treatment requires a fictional outflow of earnings and an instant reinvestment by the direct investor. The recommended treatment would result in the reallocation of retained earnings of foreign direct investors to the non-resident sector from the domestic corporate sector and a counterpart entry for Canadian direct investors.

The exclusion of retained earnings from the accounts tends to mask the true extent of direct investment and necessitates an additional reconciliation item to explain the difference between the capital account flows and the change in the international investment position. The Canadian decision to exclude the item hinged in part on the availability of data, and in part on reservations regarding the recommended international practice.

viii) Transfers

This account represents the final major category in the current account and groups together transactions in which there is no exchange of values but simply a one way transaction with no 'quid pro quo'. The account which identifies different types of transfers is necessary as a balancing device to offset the recorded inflow or outflow of real or financial resources which occur and for which there is no exchange transaction.

The Canadian account includes such items as taxes, inheritances and migrants' funds, personal and institutional gifts and remittances and official technical and economic assistance other than in the form of loans. The balance of payments account makes no distinction between current and capital transfers, but items are identified in sufficient detail to permit the distinction to be made in other components of the national accounting system in arriving at sector gross saving estimates.

ix) Current account balance

The difference between receipts and payments on the combined merchandise, services, investment income and transfer accounts described above represents net investment abroad. An excess of exports over imports results in lending abroad, while a negative figure, or an excess of payments, indicates borrowing from abroad. The non-resident sector capital finance account in the income and expenditure accounts records the same balance but with change of sign - Canadian lending equals rest of the world borrowing.

As previously noted the current account surplus or deficit is theoretically equal but with opposite sign to the net transactions in financial claims (including official reserve assets) recorded in the capital account. For example, inflows of funds generated by net export earnings become outflows as they are lent to non-residents through the acquisition of foreign financial claims. In practice a statistical discrepancy exists between the two accounts.

The causal factors underlying surpluses and deficits are not revealed by balance of payments statistics. The figures, at best, are symptoms of conditions and point the analysis in the right direction. Frequently it is unclear whether net flows of capital are the result of current transactions or whether capital flows themselves have been responsible for generating current account flows. Only close analysis of economic events in the compiling country and in its major trading partners can shed light on this question.

b) Transactions in the capital account

The capital account is the vehicle for recording transactions between residents and non-residents in financial assets and liabilities. The categories employed in Canada are those traditionally used in balance of payments statements.

As with the current account, only capital transactions affecting residents' and non-residents' claims are recorded. In addition, in order to be considered relevant for the accounts, claims must legally exist; therefore authorization of lines of credit and contingencies are not included. National accounting conventions also require that some entries of a non-financial nature be included in the capital account. For example, in the case of the acquisition by a non-resident of tangible fixed capital, the property is always deemed to belong to a resident and the non-resident's ownership is always deemed to be a financial interest and appropriately entered in the capital account.

In addition to clearcut transactions, a number of borderline cases, decided more on pragmatism than on principle, affect the capital account. Namely, refinancing of debt instruments are included as new flows, allocations of Special Drawing Rights are included as capital flows, and as previously noted, unremitted earnings are not included in direct investment.

Unlike the current account, most capital flows are recorded on a net rather than a gross basis. The increases and decreases occurring during the reference period for any particular asset are consolidated into a single net figure. In the case, say, of deposits abroad, a single figure records the value of the change in the balance between the opening and closing period, rather than recording total deposits and total withdrawals during the period. Recording net flows is in part attributable to the availability of data but it is also based on the fact that gross changes may be of limited analytical interest.

The classification system distinguishes a limited number of analytically valuable items in the context of international capital transactions. Each category tends to exhibit different characteristics and behaviour patterns. The basic distinction is the general separation of net claims on non-residents (assets) and net liabilities to non-residents. Within these two main sub-divisions there are basically five key sub-groupings: direct investment, portfolio investment, Government of Canada investments including official reserves, banking data and miscellaneous capital. Although the principal balance of payments statement presents only summarised data with a limited breakdown, supplementary information expands the classification system in a great many directions.

As noted earlier, the balance of payments and financial flows have different systems of classification for financial assets and liabilities. Although the aggregate net position recorded in the two systems coincide and the underlying data are the same, users cannot easily move between the two systems. The justification for the dichotomy is the type of analysis for which the two systems were designed.

The broad question of classification systems and their harmonisation is currently being discussed in the international agencies. A more closely related classification for use in the financial flows and balance of payments capital account may eventually emerge serving both international and domestic financial analysis.

The following briefly describe the characteristics of the main categories of transactions.

i) Direct investment

Direct investment capital is that which is directed into entities which allow the investor to influence or have a voice in the management of the enterprise. Control of an entity through direct investment is normally assumed when ownership is at least 50% of voting stock, but for operational purposes of measuring 'influence or a voice in management', direct investment is assumed to occur with ownership of at least 10% of the equity of an enterprise and includes the value of all claims intended to remain outstanding for more than one year. Direct investment applies not only to incorporated enterprises but branch operations and other unincorporated businesses.

Those enterprises owned by residents that are controlled by non-residents through such mechanisms as franchises, licensing, etc., are without foreign capital, and as such, are not included in the direct investment category.

The mix of transactions grouped under direct investment varies from funds transferred to finance fixed capital formation, to funds used to acquire existing tangible assets or voting stock and to those providing working capital to finance inventory investment and receivables. In general the capital is intended to remain with the enterprise for more than one year.

The pulling together of such diverse types of transactions under one heading is justified by the objectives of direct investment which distinguish it from other forms of investment. The direct investor is usually motivated by long term objectives and is less likely than portfolio investors to be substantially affected by short-run changes in interest rates and exchange rate variations. Fluctuations in the series are more likely to be the result of distribution of profits, take-overs and divestitures. Direct investment may also have a significant impact on trade flows of the involved countries.

ii) Portfolio investment

This series covers transactions in bonds and corporate equities, excluding those held by direct investors, official monetary authorities and Canadian banks. Other than these exceptions, in principle all transactions in outstanding issues, new issues and retirements of both Canadian and foreign securities are covered. The series attempts to capture transactions between residents of one country and another no matter what the currency of transaction, the currency of denomination of the instrument, or the physical location of the securities. The value of the securities traded excludes payments of taxes, commissions and issue expenses; estimated fees and commissions on new securities are classified as services in the current account.

Although the series refers to equities and bonds which represent capital in long-term forms, namely, with an original date to maturity longer than one year, there are frequently short-term capital movements in instruments of this sort. The short and long-term designation of flows has become more and more difficult to justify as new financial instruments and new financing practices have developed, and the terms are no longer used to any great extent in the Canadian balance of payments classifications.

Although the summary balance of payments statement distinguishes only bonds and stocks under the general portfolio heading, supplementary tables provide detail by type of issuer; for example, in the case of Canadian securities, issues by the three levels of

government in Canada can be identified, while foreign issues are identified with some geographic detail and type of issue.

iii) Government of Canada investments and official international reserves

Government of Canada loans and subscriptions to international aid organizations and export loans are classified to this group. Canada's official reserves are also included, having been integrated into the main body of the capital account rather than segregated as a separate financing item; in many respects they are now treated as one type of capital flow among many. This treatment has been adopted on the grounds that the reserves are but one of a number of means by which any imbalance in the accounts is offset. The balance is now maintained by a variety of means in addition to reserve changes; adjustment of interest rate differentials, exchange rate changes and government borrowing, all represent means by which imbalances are dealt with.

The definition of reserves is not unambiguous, particularly with respect to the range of existing claims on non-residents that are available to central authorities to finance payments imbalances, either directly or indirectly. Opinions may differ over what assets can reasonably be considered to be available to central authorities. In general however, and under normal conditions in Canada, only those foreign claims actually owned by the central authorities are included as part of international reserves.

Canadian reserves are defined to include convertible foreign currency holdings of the Exchange Fund Account, the Receiver General of Canada and the Bank of Canada; monetary gold in the hands of the central authorities; Special Drawing Rights; and Canada's reserve position in the International Monetary Fund. Changes in value that occur in these holdings depend on both actual flows and exchange rate fluctuations, but only those changes due to actual flows are included.

iv) Canadian banks' net foreign currency transactions with non-residents

Foreign currency transactions of Canadian chartered banks booked in Canada with non-residents are provided on a net basis in this category. Unlike the treatment of other institutions, the foreign currency claims of banks are netted because of their intermediation role in international finance. The net position of the banks in recent years has been that of a borrower and the item has appeared as a liability but this could swing to an asset position if foreign currency lending booked in Canada should exceed deposits accepted in foreign currencies in Canada.

v) Other capital movements

A number of categories of transactions comprise this broad grouping: on the asset side, non-bank deposits and other investments and claims abroad, and on the liability side, net issues of Treasury Bills and other money market instruments, allocation of Special Drawing Rights and other liabilities.

The 'other' capital flow categories are residual groups made up of such diverse items as real estate transactions, mortgage financing, transfers of capital for administration by trust companies, migrants' funds not transferred at the time of migration, and changes in accounts receivable and payable.

No clearly defined groupings are recommended internationally outside direct investment, portfolio investment and official reserves so that the 'other' capital designation tends to be a heterogeneous collection of capital flows defined in a way that best fits the institutional background and importance of international transactions of the compiling country.

Allocations of Special Drawing Rights (SDRs) form a separate entry in the liability category, and constitute a counterpart entry to the SDR allocation appearing as part of the change in Canada's official international reserves. The SDR is an international currency created by the International Monetary Fund and allocated to Fund members who are participants in the Special Drawing Account. This was a step taken by the Fund to increase the supply of world reserves and alleviate shortages of reserve currencies and gold which beset countries with balance of payments problems.

c) Residents of Canada

Because the concept of residency is crucial in the balance of payments system, some further discussion of the factors determining whether a person or entity is a resident of a country is warranted. Generally the determination of residency is clearcut but it should not be confused with nationality or citizenship.

Persons are considered residents when their stay in Canada is for a period of one year or more. This definition excludes visitors, seasonal workers, commuter workers, crew members of ships, aircraft, etc., who do not live in Canada and are here for less than a year. Canadian citizens residing abroad for a period longer than a year are regarded as non-residents. Special status is accorded to government personnel and staff members of international organizations - Canadian government employees stationed abroad are considered residents of Canada no matter how long their overseas posting, while employees of foreign governments posted to Canada are not regarded as residents.

The status of governments is straightforward, with agencies, departments and establishments of all levels of Canadian government being residents, including embassies, consulates, military bases, etc., located outside the country. Embassies and other representative bodies of foreign governments located in Canada are not considered residents. The rationale for the special treatment of governments and their employees operating outside their home country is that they remain subject to the laws and regulations of their own country and not those of the country in which they are located.

The greatest difficulties arise in connection with enterprises. In most cases they are classified as residents of the country in which they engage in production and/or conduct transactions in land and other non-financial intangible assets such as leases, patents, copyrights, etc. Ownership of the enterprise is not relevant in deciding residency and many Canadian resident enterprises are foreign owned.

Practical problems encountered in applying the general definition include breaking up single legal entities operating in two countries into two distinct operations, allocating transactions of operators of mobile equipment, namely aircraft, ships, and oil drilling rigs spanning more than one country, and the geographic attribution of agents' transactions. In principle, if equipment is used exclusively between two countries the operation should be split between them, but if mobile equipment moves between many countries and is only in a country for a relatively short time it should be attributed to the one country in which the owner resides and the operating company is incorporated. Transactions undertaken by agents on behalf of a principal should always be considered a transaction of the country in which the principal resides.

In practice the application of principles is constrained by available data. Fortunately, in most cases the definition of Canadian resident accords with the data collecting boundaries. It might be noted out of interest that there are a limited number of companies incorporated in Canada that are treated as non-residents - they have neither activities nor investment in Canada.

Other features of the balance of payments accounts

Supplementing the annual accounts described above, quarterly estimates and statements of the detail underlying aggregate series extend the scope of potential analysis; the current, but not the capital, account is seasonally adjusted. Bilateral balance of payments statements are available for transactions between Canadian residents and residents of the United States, Japan, United Kingdom, other European Economic Community countries, other countries in the Organization for Economic Co-operation and Development and all other countries. Although no constant price estimates appear in balance of payments publications, the current account main aggregates are deflated and appear in the input-output and income and expenditure systems of accounts.

To facilitate the analysis of merchandise transactions the reports provide trade balances for selected commodity groups, a reconciliation between trade estimates on a customs basis and a balance of payments basis, and a terms of trade index. Investment income and transfer payments are also itemized in greater detail in supplementary tables.

A series of regularly published supporting tables assist in the analysis of capital flows. Direct and portfolio investment gross inflows and outflows are given along with their geographic distribution, the type of securities according to principal borrowers, and for new issues of Canadian bonds the currency in which they are denominated. Gross purchases and sales of money market instruments are available by principal class of borrower, for example, Government of Canada, other levels of government, financial corporations and other commercial enterprises.

Because of the increasing importance of international capital flows the foreign currency transactions of Canadian chartered banks with non-residents are depicted in more detail than is available in the main table; statements provide the banks' foreign currency asset and liability changes by country of residency of clients. Supplementary statements also spell out the mix of transactions involved in changes in Canada's holdings of international reserves and the extent of the Government of Canada's foreign currency financing.

Finally, a table is included listing selected claims on, and liabilities to, non-residents that are included in the 'other' claims category. The principal entries cover trade payables and receivables and borrowings between related enterprises which, because of their short-term nature, do not fit into the direct investment concept and selected Canadian dollar transactions of chartered banks, namely Canadian dollar loans to non-residents and deposits made abroad. Borrowing from foreign banks, including Government borrowing under standby credit facility arrangements, accrued interest on Canadian bonds held by non-residents and Canadian dollar deposits from abroad are important components of the 'other' liability category.

The theoretical framework of the balance of payments and the concepts employed in measuring the transactions are designed to provide a system in which the current and capital accounts are always in balance. This does not happen in practice. Because of the diversity of transactions and the problems of data collection a discrepancy inevitably exists between the current and capital account; a separate entry is built into the system to allow for such a balancing item.

Because balance of payments statements tend to be associated with foreign exchange transactions, it is easy to overlook the fact that only a small proportion of the gross transactions recorded in the balance of payments pass directly through the interbank foreign exchange market. Many transactions are netted out in private foreign currency bank accounts or in inter-company accounts, and in the netting of foreign exchange transactions of bank customers undertaken within the

network of branches of individual banks. Many transactions recorded in the balance of payments do not pass through the market at all, such as the payment of taxes withheld at source which are recorded as both outflows and inflows, official contributions made in kind, or direct investment which takes the form of export of goods by the parent offset by the issuance of capital stock or debt by the subsidiary. It is really only at the margin that settlements require currency transactions.

Uses of the balance of payments accounts

It might be argued that the balance of payments accounts are not as widely used as the income and expenditure accounts even though they are equally well known and have certainly been in existence for many more years. If, in fact, such a contention were true it would be because they cover a more restricted field and tend to be used by a more specialised group of analysts. The important role played by international transactions in the Canadian economy ensures the balance of payments a leading position among the indicators of the state of the economy.

The external transactions that form the core of the balance of payments system also feed into the other components of the System of National Accounts and are therefore frequently used within the framework of these other components. What is happening in the balance of payments is reflected in the expansion or contraction of the domestic economy, in employment and income changes and levels, and in the condition of financial markets.

Balance of payments figures are most frequently found in descriptive analysis; external transactions are described, in a systematic way and their relationships one to another and with domestic transactions are examined. Such analysis helps in understanding the factors underlying shifts in economic activity and focuses on the important changes taking place. Such descriptive analysis appears regularly, not only in the reports that accompany the release of the statistics but in a broader perspective in the annual reports of the Bank of Canada, the Economic Council of Canada and in the White Paper normally released by the Minister of Finance coincident with the budget.

On a day-to-day basis, selected economic activities which form part of the balance of payments framework are monitored by the central bank. As a result of this surveillance, adjustments may be made to maintain exchange rates within desirable ranges, either through direct intervention in the foreign exchange markets, or the adjustment of domestic interest rates and the consequential change in international interest rate differentials. The monitoring includes international reserve movements and government debt transactions, both important component parts of the balance of payments.

More importantly perhaps, balance of payments statistics provide the support material for the analysis accompanying new policy development in such fields as tariffs, non-tariff factors affecting trade, free trade, exchange rates, direct investment, codes of behaviour for multinational enterprises, and impact of interest rate changes on international capital flows. Examples of this type of use can be found in Royal Commission studies, the most recent being on the economic union and development prospects for Canada. Balance of payments data also supported analysis in previous Royal Commissions on taxation, money and banking and Canada's economic prospects.

Economic Council of Canada reports on special aspects of the Canadian economy such as foreign aid, external trade and tariffs have prominently featured the balance of payments. Both the data and the framework have been used to provide perspective on the effect of existing policies and to measure the impact of alternative policy changes. An excellent example of the use of balance of payments and international investment data occurred in the studies leading up to the implementation of the Foreign Investment Review Act. The background study, 'Foreign Direct Investment in Canada' known as the 'Gray' report, made extensive use of capital and current transactions with non-residents in developing its recommendations.

In more recent bilateral negotiations with the United States over freer trade in both merchandise and services, balance of payments data have been under close scrutiny. The need for more detail underlying the rapidly expanding trade in services has resulted in a new annual publication, "Canada's International Trade in Services", Statistics Canada, Catalogue 67-203.

External transactions have provided a rich area for theoretical exploration. The balance of payments framework has long been prominent in the development of theories attempting to explain the adjustment process of international trade. Two such examples are the classical theory which describes the automatic adjustment process under the gold standard and the elasticity approach which deals with the balance of payments adjustment process under flexible exchange rates.

Other theories view the balance of payments as the outcome of national income and expenditure policies, in which improvements in balance of payments hinge on raising income relative to the absorption of goods and services. A more recent theory, labelled the monetary approach to the balance of payments, argues that balance of payments imbalances arise because of disequilibrium in the domestic supply and demand for money, an excess demand leading to a balance of payments surplus and an excess supply resulting in a deficit.

The above examples demonstrate the importance of balance of payments estimates in assessing the impact of changes in trade policy, exchange rates, domestic interest rates, changes in tariffs and even broad domestic economic policy.

Links and reconciliations with other branches of the accounts

The balance of payments linkage to other systems is different in nature and more complex than that which exists between other components of the national accounts. First, the balance of payments does not fit

sequentially into the system in the same way that capital finance accounts in the income and expenditure system lead into financial accounts, which in turn connect with balance sheet statements. Secondly, the balance of payments international definitions, classifications and concepts are rooted in different soil. The internationally recommended framework developed under the auspices of the International Monetary Fund, while the other systems owe their international framework to the United Nations.

The balance of payments, in some ways, replicates other components of the system of accounts but only for the international segment of the economy. The current account, for example, records transactions in goods, services, investment income and transfers, and parallels the income and expenditure non-resident sector account, while the capital account is a replication of the financial flows for the rest of the world.

In the Canadian system, the balance of payments current account is integrated into and forms part of both the input-output and the income and expenditure systems. The capital account is reformatted and integrated into the financial flow system, at the same time providing the changes in assets and liabilities that feed into the international investment position and national balance sheet systems.

a) Links with input-output

In the case of the input-output tables, because they are structured to examine fine level industry and commodity flows, merchandise imports and exports are taken from the detailed figures of the International Trade Division's reports. The data are however adjusted to reflect the balance of payments concepts. Sales and purchases of services are taken directly from the balance of payments. In aggregate terms the balance of payments and the input-output system are fully integrated in the sense that the statistics used are identical.

In the case of both the balance of payments and input-output systems, the customs valuation of merchandise exports reflected in external trade statistics needs adjusting to remove elements of service values, such as freight and insurance. In principle this adjustment should be unnecessary as such costs should be excluded from the customs trade valuations; in practice, however, these costs are sometimes included. The adjustments are made at the commodity level in both the balance of payments and the input-output system. Freight and insurance constitute service charges in the balance of payments and a margin and not part of the producer's value in the input-output system. The producer value is taken to be at the point of shipment for export.

In the input-output system, imports of goods at producers' prices are valued at the Canadian border and include import duties, plus shipping and insurance charges up to the border when provided by a non-resident. This valuation of imports creates a conceptual difference between the balance of payments and the input-output systems. To reconcile the two systems the freight and insurance payments recorded as services in the balance of payments must be transferred to the value of imports of.goods in the input-output tables. The overall level of payments to non-residents remains the same in both systems.

To the extent that imported commodities constitute part of the range of commodities used by Canadian industries in their productive activity, they appear implicitly in the 'use' matrix. However, it is only in the final demand matrix that the obvious link with the balance of payments is apparent.

Investment income flows which form part of the current account in the balance of payments are not incorporated in the import and export figures employed in the input-output structure; they are factor payments and as such do not need to be distinguished in the domestic production measure. Receipts by residents of investment income from abroad is not relevant while investment income of non-residents arising in Canada is implicitly embodied in the domestic measure. Investment income flowing between residents and non-residents is required only in order to convert from a domestic to a national concept.

Transfer payments and receipts are excluded from the input-output tables. These transactions which are important within the balance of payments framework have no relevance within the production accounts; they are redistributional transactions which occur after the production process.

b) Links with income and expenditure

Canadian balance of payments statistics are incorporated into the income and expenditure accounts, both as a component in deriving gross domestic product from the demand side and in compiling the non-resident sector account. The classifications and concepts employed in both systems coincide. The main expenditure table includes exports and imports of goods and services incorporated directly from the balance of payments. Investment income flows and current transfer payments between residents and non-residents are not required as inputs into the measure of expenditure on domestic production but are incorporated along with goods and services in the non-resident sector account which covers all current transactions of the sector.

The income and outlay account for non-residents is derived from and agrees with the current account of the balance of payments, except for transfers relating to inheritances and migrants' funds which are classified in the current accounts in the balance of payments but as capital in the income and expenditure accounts. After allowing for this difference the current account surplus or deficit is identical, with sign reversed, to the gross saving recorded in the non-resident sector income and outlay account.

c) Links with financial flows

The integration of the balance of payments capital account into the financial flow accounts is complete and fully consistent at the aggregate level - the capital account forms the rest of the world sector. The integration is not transparent because of the differing classification of financial instruments adopted in the two systems. The net lending/ borrowing in the rest of the world account is conceptually identical with the net capital flows in the balance of payments. To preserve this identity and due to the different treatment of inheritances and migrants' funds within the system, the financial flows records them in 'net purchases of existing assets'.

The net capital flows recorded in both systems reflect either foreign saving made available to Canada, or Canadian saving lent abroad. As with the current account, the signs in the two systems are reversed, Canadian lending abroad is seen as an outflow of capital from Canada and appears as a negative entry in the balance of payments, but viewed from the rest of the world perspective the entry is a positive inflow of capital.

At the published level of detail the reconciliation requires a reformatting of the balance of payments capital account to fit the financial flows, in some cases sub-dividing and reallocating items and in other cases combining published items. A detailed reconciliation is not regularly published but illustrative examples have appeared, the most detailed being that included in 'The Canadian Balance of Payments and International Investment Position - A Description of Sources and Methods' Statistics Canada, Catalogue 67-506.

An interesting example of the different approaches to recording transactions occurs in the case of Canadian bond issues. The balance of payments summary statement uses the instrument as the basis of reporting and records a single net flow under liabilities to non-residents comprising new issues, retirements and trade in outstandings. The financial flow accounts categorize bond transactions by issuer. There seems to be little substantive reason for the different classifications which are probably attributable to the historical sequence of development. Attempts are now being made to bring greater consistency to the classifications for balance of payments and the rest of the System of National Accounts, particularly in the area of financial transactions.

d) Links with the international investment position

The capital account of the balance of payments bears the same relationship to the international investment position as the financial flows bear to the national balance sheets. The international investment position is, in fact, a balance sheet of Canada's position with non-residents in which are recorded claims on and liabilities to non-residents. As noted in an earlier section the international investment position statistics are the basis for the rest of the world sector in the national balance sheet accounts.

The change between opening and closing balance sheets is principally the result of transactions in assets and liabilities during the period. Thus transactions recorded in the balance of payments capital account constitute a large part of the changes in the Canadian international investment position. Other events unconnected to transactions also affect changes in the stock of assets and liabilities and must be explained in order to reconcile the Canadian balance of payments capital account and the international investment position. Such a reconciliation is prepared periodically and includes such items as reclassification of assets or liabilities, exchange rate fluctuations, and the reinvestment of undistributed earnings.

One reason why the link between the balance of payments capital account and the international investment position is not always widely appreciated is that there has been a paucity of information in international statistical manuals concerning guidelines and classifications relating to international investment balance sheets. This presumably reflects a rather late recognition of the value of balance sheet data, a fact borne out by the historical lag in the development of estimates of international indebtedness estimates by many countries. Such data have assumed a much higher profile in recent years as international capital movements have become the centre of much economic tension.

II - International investment position

General

A relatively complete set of official estimates of the Canadian international investment position goes back to the year 1926, and was first published as a whole in 1950. Initially the reports consisted of highly summarised statements, but over the years the framework was extended so that finally by 1967 a fairly detailed and complete statement of Canada's balance of international indebtedness existed. Estimates are now prepared and published annually. The classifications used have remained largely unchanged through the history of the series so that there is a high degree of continuity in the statistics.

This last piece in the statistical mosaic of the Canadian economy, is probably the least well known, certainly in the context of its relationship to other parts of the System of National Accounts. The measurement of outstanding international investment has also been relatively neglected in the statistical manuals of the international agencies until more recent years, when international indebtedness began to pose serious economic problems. Detailed definitions and links that have been forged between other parts of the system are less clearly evident in the case of international investment.

The international investment position statement is a record of Canadian residents' investment abroad and non-residents' investment in Canada. Essentially it is a balance sheet that records financial claims on non-

residents as assets and non-residents' claims on Canada as liabilities. The balance represents the net international investment position; an excess of assets over liabilities indicating a positive contribution to net national wealth and the reverse signifying a negative contribution. Table 5 on page 74 includes a condensed version of the Canadian international investment position as at the end of 1981. `It is included in the table with the balance of payments to demonstrate its close links with the format of the capital account.

The structure of the normal balance sheet is modified in the international investment position presentation to the extent that the asset side shows no investment category 'non-financial assets'. Following national accounting convention, all investments abroad in tangible goods are treated as if they were financial assets; for example, ownership of plant and equipment is included in the category 'direct investment' and ownership of real estate and goods abroad is covered under 'miscellaneous investment'.

The system has two distinct links with other branches of the Canadian System of National Accounts. Changes in international investment outstanding are largely the result of inter-country flows of capital recorded in the balance of payments capital account. Secondly, the international balance sheet transforms into the rest of the world sector in the national balance sheet accounts. In the latter context international investment can be seen in terms relative to accumulated domestic investment.

The broad concepts, classifications and definitions governing the international investment position statements are those that apply to the balance of payments capital account, particularly in the case of principal items such as direct and portfolio investment. For most series it is possible to track the flows directly between the two systems because the transactors are usually identical, the classification system and definitions are similar, and the valuation of assets and liabilities is normally the book value found in the accounts of the surveyed corporations.

Apart from the overall statement which provides summary measures of assets and liabilities, the Canadian international investment statistics focus on a detailed decomposition of direct investment abroad and foreign direct investment in Canada. Investment is classified as 'direct' when it is associated with some form of ownership influence over the receiving enterprise, normally accomplished by equity ownership. The level of direct investment is examined by country of destination in the case of Canadian investment abroad, or country of origin for inward flowing investment, the industry in which it is taking place, the size of investment and the number of enterprises involved. Supplementary data also put the amount of foreign investment in Canada in perspective by expressing it as a proportion of overall investment in the industry.

Extending the statistical analysis of the economy

The international investment position statement runs parallel to the rest of the world sector in the national balance sheet accounts and uses identical figures but it adds considerably to the stock of economic statistics. It presents a quite different perspective on international investment by focussing on the purpose of investment rather than the instrument; it provides a greater historical perspective; and it explores certain categories of investment in much greater depth.

a) Classifications

The summary framework is simple - a balance sheet with eight categories of assets and a like number of liabilities. These items are only briefly described below as they tend to match the previously defined classes used in the balance of payments capital account.

The character of the classification in the international investment position differs from that used in the national balance sheet accounts. In the investment position it is designed to allocate claims according to the underlying purpose of the investment, whereas in the balance sheet the design is structured around the type of instrument and sectoral relationships. To a large extent the classifications in the investment position have been shaped by the analytical use made of the data and by the source material available.

The emphasis placed on the international investment position as a vehicle for analysing the extent to which the Canadian economy is owned and controlled abroad and assessing the potential for short-run flights of capital has had an important bearing on the classification structure. In addition, techniques adopted for the collection of information on international investment transactions that affect only a relatively small universe are quite different from those used to capture balance sheet data for entire domestic sectors, and to some extent this has dictated the outline of the classification system.

i) Direct investment represents the book value of long-term capital owned in subsidiaries, affiliates and branches by investors in a position to exercise influence over the management of the enterprise. It is normally identified by related investors holding a sufficiently large block of voting shares, at least 10 percent of the voting equity. The book value includes not only the owner's equity holdings, which is the main factor determining whether investment should be classified to direct investment, but all other forms of long-term debt, such as bonds, debentures, loans and advances. The series are important inasmuch as they provide a valuation of real and financial assets owned in Canada by non-residents, or owned abroad by Canadians, in enterprises over which they exercise some measure of influence.

Additional series measure the long-term capital employed in firms in Canada that are controlled from abroad, as well as those that are controlled by Canadian residents. These are known as the 'control' series. The series provide an important dimension of international investment. Capital controlled by non-residents in particular

industries may differ from the capital 'owned' series and vice versa. Control over large amounts of capital employed can be exercised with a fairly limited ownership of voting stock. However, the total amount of capital owned (by residents and non-residents) will always be identical to the total capital.

For the ownership series, the concept is the same as the balance of payments and includes all long-term investment employed in Canada by direct investors. The control series does not have a counterpart in the balance of payments.

In the case of Canadian direct investment abroad, there is an element of non-resident participation to the extent that Canadian enterprises undertaking such investment are themselves foreign owned. Although the figure of Canadian investment abroad is not reduced to eliminate this, a special entry recognizing the fact is recorded as a liability in the balance sheet. That part of foreign investment that has flowed through Canada to other countries is excluded from foreign investment in Canada since the latter is compiled on the basis of long-term capital employed in Canada. To arrive at total foreign long-term capital employed in Canadian enterprises, non-resident equity in Canadian investments abroad must be added to foreign investment in Canada.

ii) Portfolio investment abroad by Canadian residents and in Canada by non-residents encompasses the holding of securities in which the holder is not in a position to exercise a voice in the management of the company. The intention is generally to hold the security as an investment instrument rather than as a means of exercising influence or control. Securities are valued at the book value reflected in the accounts of the issuer. Portfolio investment in Canada, the single largest liability item, contains large foreign holdings of government and public utility debt. Estimates for some investments having similar characteristics to portfolio investment are found in the miscellaneous category; in instances where the estimate is more judgmental the classification boundaries have been less strictly applied.

iii) Miscellaneous investment abroad by Canadian residents includes holdings of non-corporate real estate, bank and other long-term loans, claims on foreign estates and trusts, the estimated equity of Canadian members in international trade unions and of policy holders in insurance abroad. The item is essentially a residual category of longer-term type investment and has in the past been used as repository for difficult to classify one-time transactions.

Miscellaneous long-term investment in Canada includes foreign holdings of Canadian securities not included in portfolio investment, mortgages on Canadian real estate, non-corporate real estate holdings in Canada, and other uniquely identifiable long-term investment such as allowances for non-resident equity in Canadian owned international bridges and cable facilities. Again this category reflects a rather heterogeneous collection of items and is in the nature of a residual classification in which the measurement of Canada's liabilities to foreigners is less detailed than in other categories.

iv) An important Canadian asset with no matching liability is Government of Canada long-term investment abroad, including loans to foreign governments. Also included in this category are capital subscriptions and advances to international financial agencies, excluding the provision of funds to the International Monetary Fund, which is classified to Canada's official monetary assets. A significant element of Government of Canada assets abroad consists of medium and long-term export credits.

v) Other Canadian investments abroad fall into four categories: non-bank holdings of deposits abroad, the chartered banks' net foreign currency asset position, a miscellaneous short-term category, and Canada's official monetary assets. In more recent years the chartered banks category has remained unused as chartered banks have consistently recorded net foreign currency liabilities.

The official monetary asset series includes convertible foreign currency holdings of the Exchange Fund, the Receiver General for Canada and the Bank of Canada, official holdings of monetary gold, Special Drawing Rights and Canada's reserve position in the International Monetary Fund. The other short-term categories include such items as Canadian residents' bank balances held abroad, investments in foreign treasury bills and trade and other receivables due from abroad.

The remaining foreign investment in Canada is sub-divided into five broad liability categories: allocation of Special Drawing Rights, non-resident holdings of Canadian dollars, the chartered banks' net foreign currency liability position, other short-term liabilities and non-resident equity in Canadian assets abroad. (The equity position of non-residents in Canadian investment abroad through their ownership of Canadian enterprises has already been noted).

Special Drawing Rights are a form of official reserves issued by the International Monetary Fund and used in the settlement of balance of payments imbalances. The inclusion of amounts identical to the initial allocations of Special Drawing Rights to Canada are recognized as a liability to the International Monetary Fund in the Canadian international investment statement. The treatment is in accord with the Government

of Canada's recognition of a liability in its published public accounts. This treatment is to a large extent conventional as no apparent liability exists because of the creation and allocation of SDRs. The allocations also appear as an asset in the international investment figures as a component of Canada's official reserves.

The other short-term liability categories noted above cover Canadian dollar deposits of non-residents with financial institutions in Canada, holdings by non-residents of Government of Canada treasury bills, Government of Canada demand liabilities mainly payable to international investment agencies, holdings by non-residents of short-term paper issued by Canadian corporations, bank borrowing abroad, short-term advances to sales finance and consumer loan companies from their foreign parents and short-term trade and other payables.

The summary balance sheet shows the net balancing item, equivalent to net worth (assets less liabilities) but labelled net international investment. Unlike the net worth of a corporation, which under normal conditions is positive, it is quite usual for countries to record negative net international investment. It means that the level of foreign investment is greater than that country's investment abroad.

A cumulative figure of the statistical discrepancies between the current and capital account of the balance of payments is given as a footnote item in the summary measures to indicate the possible over- or understatement of the net international investment position. The cumulative statistical discrepancy is suggestive of an overstatement of the country's net international indebtedness. Some part of the unmeasured outflow of funds recorded in the balance of payments in recent years is likely to have been associated with the net acquisition of assets.

b) Valuations

No single valuation method is used in constructing the international investment position figures. Brief reference was made to valuation methods in describing the classification categories but they have neither been specifically identified nor discussed. The three basic valuations are book values, face values and market values. The process of valuing international investment is more difficult and lacks the symmetry and checks available in valuing domestic sectors' balance sheets. Domestically the universe can more easily be identified and in some cases financial assets and liabilities can fairly readily be balanced.

The most widespread valuation used is book value in Canadian funds which is defined as the value of claims as they appear in the books of the issuer. Although constrained at times by the practical problems of assembling data, an attempt is made in preparing the estimates of direct investment to use values recorded in the books of the unit in which investment is being measured. The book value of direct investment in, say, a wholly owned subsidiary, is its net worth or equivalent, the value of the company assets less depreciation, deferred taxes and any other liabilities which the company may have.

The book value is, of course, determined by the way in which the company values its own assets and the method used to depreciate its assets. In general, straight-line depreciation will be based on historical rather than replacement cost of assets. It has been argued that a valuation based on replacement rather than historical cost is a more appropriate valuation for balance sheet data but in the international investment position such figures are not generally available.

In principle, the book value method is also applied in arriving at that part of the estimate of portfolio investment consisting of investment in shares. In addition to value changes due to resident/non-resident transactions in new and outstanding shares, estimates of the book value of untraded share holdings change significantly on a year-to-year basis, due to the growth in internal earnings of companies. The book value method yields a different estimate from that which would result from using the value of shares carried on the books of the investors.

Those parts of direct investment, portfolio investment and other long-term investment representing bonds and other forms of debt securities are valued at the nominal or face value at which they are carried in the books of the debtor. Foreign currency denominated bonds are an exception and are valued at the year-end exchange rates vis-a-vis the Canadian dollar; the valuation method employed may result in estimates considerably different from either carrying or market valuations.

Short-term claims are normally valued at nominal or face value when they can be transferred on demand at full value. In this case the difference between market value, carrying value and face value is unlikely to be significant.

Investment abroad by Canadian residents and outstanding obligations to non-residents may require further valuation adjustments to convert claims denominated in foreign currencies into Canadian funds. Canadian direct and portfolio investments abroad are converted into Canadian dollars at the exchange rate prevailing at the date for which the estimate is being prepared. All debt securities are now converted into Canadian dollars at the year-end closing exchange rate of the year of estimate.

Other features

The main emphasis of the international investment position statement, outside its balance sheet function, has been to illuminate the extent of direct investment in Canada and direct investment abroad, particularly from a geographical and industrial perspective. It also exposes

in some detail the structure of outstanding Canadian debt held by non-residents.

Direct investment in Canada is analysed by geographic distribution of ownership and the industries in which ownership is held. Data on Canadian direct investment abroad are analysed by number of concerns holding investments, the size of investment and the size of those making the investment; the number of concerns in which investments are held and the form of organization of those involved are also published. Separate series for gross inflows and outflows of funds by industry, which together comprise the published net direct investment estimate, are available for all countries combined and for the United States alone. These series are valuable in assessing the extent to which direct investment funds may be being withdrawn from or invested in Canada, a fact sometimes masked by net figures.

In order to provide perspective, a number of series have been constructed to illuminate the extent of direct investment in both the Canadian and foreign economies. A measure of total investment controlled in Canada by foreign direct investors, or abroad by Canadian direct investors, indicates the leverage type impact of ownership. For foreign direct investment in Canada, capital owned and controlled by non-residents are both calculated as proportions of total capital employed in Canadian industries, providing some perception of the degree of foreign penetration in major segments of the economy. The statistical difficulties in compiling the series are formidable and involve, amongst other things, meshing foreign investment estimates based on consolidated balance sheets with total Canadian investment aggregates based on unconsolidated balance sheets, and in compiling both series within comparable industry classifications. The results, nevertheless, are regarded a valuable contribution in understanding the role of direct investment in Canada.

The industrial classification used in the international investment series is one that grew up with the series and one that is out of step with the industrial classifications employed in other parts of the System of National Accounts. Based on the classification of the consolidated enterprise to its principal activity, it is likely to be less pure than the industrial classification of establishment or company data and should be used cautiously with statistical series classified by other levels of organization.

Subsequent to the development of the direct investment series which focus on ownership and control, much supporting and supplementary information has become available through other surveys, such as those associated with the Corporations and Labour Union Returns Act (CALURA) and the former Foreign Investment Review Act.

The international investment position supporting tables also include portfolio investment in Canada according to the principal area of residence of the holder, the type of investment and the industry in which the investment is held. Detail is published which throws light on the debt structure of different levels of government, the total value of net long-term funded debt outstanding and the amount held by non-residents. Estimates also provide the currency of payment, date of maturity and estimated debt service payments in future years.

Although the formal structure of the Canadian international investment statistical system has tended to be fixed over many years, the system itself tends to be more flexible than other branches of the System of National Accounts. With no international guidelines to follow, it has reacted more promptly to emerging situations in terms of preparing special purpose tables and analysis.

Uses of the international investment position

Uses are mainly found in government and academic circles where international investment position estimates serve to support research studies on the impact of international capital flows and the development of position papers and policies relating to external relations. The estimates are also frequently used by financial analysts to support projections of balance of payments developments.

The international investment position estimates provide a valuable set of statistics that offer an insight into one aspect of Canadian relationships with the rest of the world. The system is capable of 'standing alone' and the series themselves analysed independently and within the framework of the system, or 'interconnected' in which case the system is used in conjunction with other branches of the System of National Accounts, particularly the balance of payments. From previous comments it should be clear that the estimates are the only source of information on the geographic disposition or origin of international investment.

The data are used primarily to provide a measure of the magnitude of the country's aggregate claims on, and liabilities to non-residents, the distribution of assets and liabilities, the liquidity of the country, and whether on balance the country is a net debtor or creditor. In analysing Canada's current position, projecting future trends, and formulating policy, it has been useful to distinguish the types of investments, examine the composition of assets and the structure of debt, isolate the amount of debt carrying contractual obligations and identify claims carrying service obligations in foreign currencies. These examples have all been of interest at one time or another in Canada for the study of specific problems involving large scale capital movements, direct investment levels, sharp losses in holdings of international reserves, exchange rate fluctuations and interest rate movements.

Policies relating to the encouragement or discouragement of foreign investment in Canada have leaned heavily on international investment position measures of direct investment and the extent of foreign control over parts of the Canadian economy. The established levels of direct investment have also served as the base from which to project future growth patterns, sub-divided between growth attributable to new flows of capital and that due to the reinvestment of current earnings by existing direct investment enterprises.

The data are frequently used in conjunction with balance of payments estimates because of the interrelated nature

of the transactions; in some cases the relationships are direct as with the capital account, and in others indirect as in the case of current account entries. Projections of debt service payments and receipts and of dividend flows depend to a large extent on estimates of the levels of direct and portfolio investment; the relationships in this situation are fairly clear and straightforward.

There are however, important relationships involving international investment and balance of payments that defy easy analysis. For example, the pattern of trade is partially dependent on the amount and direction of direct investment, but it is difficult to know whether foreign trade may be stimulated because of the links between related companies, or dampened because the foreign controlled firm supplies the domestic market formerly served by imports. Unravelling the full impact of these relationships is vital to any bilateral trade negotiations and commercial policy. This type of analysis requires the joint use of international investment and balance of payments data.

Rapid growth in international financial markets and massive and instantaneous transfers of funds across international borders have made it more necessary than ever to keep track of international movements of funds, at the same time making it more difficult. As a major player on the international debt scene, it is important for Canada to monitor the overall size and growth in Canadian loans to high risk debtors; repercussions from potential or actual defaults reverberate throughout domestic financial institutions. On the other side of the coin, with the growing dependence of Canada on foreign financing of government deficits, the maintenance of accurate estimates of foreign held debt is essential because of its close relationship to domestic interest rate policy and the rate of economic activity in the country.

Links and reconciliations with other branches of the accounts

One of the principal links is with the national balance sheet system in which the international investment position forms the rest of the world sector account. The chapter covering balance sheet accounts specifically describes this link and will not be repeated here. The net balances derived from the two systems of accounts are identical and the underlying data are derived from the same source. As noted earlier, superficially the two sets of data appear quite different because they use disparate classification categories. The only occasion when a reconciliation item may be required is when the phasing in of new data gets temporarily out of step.

The other direct link is with the balance of payments, where flows in the capital account represent the major elements in changes in the level of assets and liabilities in the international investment position. This link and the reconciliation items required to tie the two series together were described in the chapter on balance of payments; readers are referred to the relevant section in that chapter for further details.

Technically the international investment position numbers are derived independently from the balance of payments data, and year-to-year changes are not built up from the capital account flows plus reconciliation items such as exchange rate and valuation changes. The estimates rely mainly on surveys of assets and liabilities outstanding as opposed to the flow data used extensively in the balance of payments. Because of the different source data, the reconciliation, although theoretically straightforward, is at best an imprecise statistical exercise; by the same token, it plays a role in validating some of the component series.

Reconciliation is further complicated by the statistical discrepancy recorded in the balance of payments. If the cumulative discrepancy were entirely attributable to errors and omissions in the current account of the balance of payments it could be ignored in the reconciliation. If, however, it was all due to capital items it would be required as a reconciliation entry. The size of the cumulated statistical discrepancy indicates a consistent understatement of payments/outflows or overstatement of receipts/inflows in the balance of payments accounts, which when carried into the international investment estimates represents an overstatement of indebtedness.

At present no official reconciliation of the international investment position and the rest of the world sector balance sheet account is published regularly, although the concordance of different classifications used in the two systems is contained in the balance of payments and international investment sources and methods publication (Statistics Canada, Catalogue 67-506). Partial reconciliation statements between the flows of the capital account of the balance of payments and the level changes in the international investment position appear in reports on the latter series.

Chapter 7

Controversy, Convention and Creativity in the Accounts

Introduction

The preceding chapters described the concepts and contents of major components of the System of National Accounts; this final chapter is devoted to those areas of the accounts shaped more by convention and data availability than by the theoretical framework. It is in these areas, where matching practice and theory is difficult, that the accounts have been embroiled in most controversy.

To provide some perspective, this chapter reviews a limited number of the 'classic' problems as well as a few newer concerns that may eventually change the shape of the accounts. The purpose is not to provide solutions but to illustrate the range of problems that confront national accountants in translating abstract models into statistical statements.

The examples highlight areas where it has been necessary to take a pragmatic approach to problem solving, as well as those where changes in social and economic conditions have called into question the relevancy of existing measures. In order to cover the ground, it has been necessary to assume that the reader has by now acquired a reasonable understanding of the underlying concepts and complexities of national accounting, and to deal with the issues in a more superficial manner than might be considered ideal. A thorough study of the topics raised in this chapter would require a separate book.

The literature tends to deal with most issues in the context of the input-output and income and expenditure systems. The financial components of the accounts have not as yet stimulated the same degree of interest, although similar questions of valuation, classification, residency and structure are present in these systems.

The explanation may be that the production systems are closely tied to theoretical economic constructs. The translation of these into statistical measures has encouraged a lively debate within the economics profession, whereas the financial systems are more closely aligned to the accounting profession but are not of direct concern to that profession. In a sense, the problems of the financial systems slip between the cracks of the economists' and accountants' domains, with neither feeling a direct responsibility for maintaining their conceptual purity. As a result, concepts are not as closely scrutinised outside the national accounting community, nor are the decisions of the statisticians as persistently challenged. A less weighty reason may simply be that the income and expenditure system is more widely known, more widely used, and more widely questioned.

The topics discussed in this chapter fall into three groups, one covers long-standing classic national accounts problems, a second deals with suggested extensions or modifications to the existing framework and a third looks at more fundamental changes suggested by changing social and economic conditions. The three groupings are not mutually exclusive.

Classic issues

Most problems discussed in this section are as old as national accounting itself and might be characterised as 'hardy perennials'. They have been studied by all national accounting scholars, none of whom has provided fully satisfactory solutions. A large number of the issues have to do with the measurement of output and the boundaries of economic production. Within this category reside questions dealing with the scope of imputations, the final or intermediate nature of government output, the correct measurement of the output of financial institutions, and the most appropriate treatment of interest.

Other issues touched upon in this section are the definition of sector boundaries, particularly the content of the personal sector, the problem of using enterprise and establishment based statistics within the same system, and the deflation of income aggregates, allowing for the terms of trade effects.

a) Output and the boundaries of production

The single most discussed issue has been, and still is, where to draw the economic production boundary. A coarse net which captures all market or money-exchange transactions in goods and services provides a general measure of gross economic output; sifting this through a finer mesh to exclude intermediate goods and services used by business results in a residual that measures final or net output of market transactions in the money-exchange economy. This is the core measure of output used in the production accounts.

Controversy commences immediately, with debate being joined over the extent to which production not captured by measuring only market transactions should be allowed into the measure and for what specific transactions; whether some government output considered as final production should more appropriately be classified as intermediate output; and how to allow for the output of banks and related financial institutions inadequately measured using traditional national accounting methods.

i) Imputing values to production not captured in the normal measurement of money-exchange transactions has been fairly severely restricted by practicing national accountants. In the Canadian accounts they are confined to a valuation of rent on owner-occupied dwellings,

farm products consumed directly by farm households, food and lodging supplied to employees in lieu of wages, services provided by financial intermediaries for which they make no charge, and consumption of government capital. The imputations fall into two categories: those for which there is an actual transaction between independent transactors but the money transaction is short circuited, as in the case of food given in lieu of wages, and those in which there is no actual transaction in the market place but one is assumed to take place with a single transactor playing both producer and consumer, such as owner-occupier housing rentals. The latter are, in a sense, more fictitious than the former.

The reasons for including both types are that they have counterparts in the money-exchange economy, they are likely to be significant, they can be readily valued, and in the case of owner-occupied dwellings, the resulting measure of the country's total production is invariant to shifts in the proportion of rented to owned dwellings. Given the above reasons, the decisions are clearly based more on pragmatism and convention than concept. Considerations of analytical usefulness also played a role in the decisions; for example, farm products consumed directly on the farm were included because of the importance of subsistence agriculture in many countries and the need for some degree of international comparability in national accounts.

National accounting students should not search too long for deep seated principles governing imputations, nor for any real attempt to achieve consistency. For example, why are do-it-yourself labour activities of householders not valued as economic production? Those in favour of more welfare-oriented aggregates have argued for the inclusion of a wide range of non-marketed services rendered within the home. The classic illustrative example involves the marriage of an employer and housekeeper - before the marriage the services are considered part of economic production but after the marriage they cease to be measured. 'This treatment flies in the face of the invariance argument and reflects an artificial decline in the well-being of the population.

The extension of imputations to cover household services has been forcibly argued and has many interesting facets. What should be included if household services were to be considered economic production - cooking, child care, gardening, chauffeuring, personal care - and at what value? The only limitation on imputations proposed by some seems to be the requirement that the activity can be matched by a similar transaction taking place in the money-exchange economy.

The debate over the extent to which household activity should be included in the measure of production assumes increased importance in those countries in which a high proportion of households are mainly engaged in own-account activities that produce commodities capable of being marketed. The production of own food, clothing, transportation and building may represent a significant contribution to the overall output of the country. This particular conceptual issue is mainly academic in the Canadian context.

There is no correct answer to the scope of imputations question, and the debate will continue as long as there are people with different perceptions of the purposes of the accounts. Meanwhile national accountants continue to interpret economic production as containing a fairly limited range of imputations. Further discussion of imputations arises in the context of output measures for banks and again in a later section dealing with more recent issues in national accounting.

ii) For several decades the question of whether certain government activities should be classed as final or intermediate production has been debated. In practice, governments are regarded as producing and furnishing a range of services and goods for the collective use of the nation. Because the government pays for such commodities, they do not appear as expenditure of the ultimate beneficiaries but rather as final expenditure of government. The services and goods are not in general resold or charged to current expense and hence they fit the definition of final output. In recent years the question of the attribution of government expenditures to ultimate consumers has been raised but this will be discussed in a later section.

The conventional treatment, which accepts government current expenditures as final output, has been challenged on the grounds that certain government services are intermediate services. The various arguments centre around the notion that final products are those which provide some ultimate satisfaction to consumers and that goods and services which only facilitate the process should be excluded.

For example, government services provided to business to stimulate private sector production, such as trade programmes to promote exports, are akin to intermediate products and their inclusion in government final output involves a degree of duplication in the accounts. The welfare school of national accountants have argued that final output should reflect the welfare of society, and to the extent that the purpose of government expenditures is primarily to sustain a climate in which welfare-oriented spending may take place, they should be excluded. These expenditures have been dubbed the 'regrettable necessities' of society and include such items as military equipment and anti-pollution devices.

The removal of these items would require that they be treated similarly to subsidies in order to balance the income and expenditure based estimates of production.

On practical grounds alone, efforts to sub-divide government expenditures between final and intermediate have been resisted, there being no generally acceptable and clear-cut way to allocate them along these lines. Logically, if government expenditures on security forces were excluded from final output, parallel outlays by persons now considered final, on say burglar and fire alarms, should also be removed.

Finally, even the more welfare oriented national accountants generally accept that the elimination of certain government expenditures from final product would not contribute greatly to an understanding of changes in the nation's welfare given the mix of other factors at play, such as shifts in income distribution, preferences and technology.

iii) The method of valuing the services and output of banks and similar financial intermediaries has persistently troubled national accountants. Although the current practice was outlined in the input-output chapter it bears repeating as users sometimes have difficulty with the methodology.

Because banks finance many services provided to lenders and borrowers out of interest received on depositors' invested funds, rather than charging for them directly, standard national accounting method of measuring output yields an unrealistically low or negative figure. The product originating in the industry fails to take into account the value of services performed free of charge, while the income originating is low because net interest payments are normally negative in the industry. (Interest received is netted against interest paid in order that it not appear as income originating in the industry of both payer and payee).

In order to remove this anomaly two adjustments are made to normal national accounting methodology - the excess of interest earned over that paid is assumed to be equal to the value of services rendered to clients and is treated as revenue of the banks, and secondly the full amount of interest earned on the banks' investment of deposits is paid out to clients. This manoeuvre places a monetary value on the transactions that are short-circuited in the banks' operating procedures and yields a more normal book-keeping estimate of the banks' value added. The method has been criticised because of its mechanistic character and its assumptions regarding the payers of bank charges and beneficiaries of free bank services.

To which sectors should this imputed charge for banking services be assigned? The United Nations guide to the system of national accounts recommends assigning the entire charge to a dummy or fictional industry as an intermediate expense. This simply has the effect of transferring the negative output from the banks to a dummy industry; it does not solve the problem but makes it less visible. Such a treatment results only in a redistribution of total output, raising banking output and lowering that of a fictional industry. It is unsatisfactory insofar as it does not recognize that some banking services represent final output that should be included in expenditures of the household and government sectors.

The Canadian system splits banking charges, assigning part to intermediate expenses of specific industries and part to final expenditure of households and government. The allocation is necessarily crude but it removes an important criticism of the internationally recommended procedure.

An unconventional solution suggested for measuring the output of banks and similar financial institutions involves treating interest flows as payments or receipts for services rendered, which implies acceptance of the fact that production originates in industries lending funds and not in those employing them. It places interest receipts firmly alongside revenue from sales of other services and interest payments among the intermediate expenses of the banks. Although solving the output measurement dilemma, this approach to interest has widespread implications for other areas of the accounts and has not generally been endorsed by national accountants. Others have argued that there is no theoretical justification for imputing a value to services provided free by the banks, while some have taken the position that the gross output of banks should be measured in the same way as government output.

Despite widely recognized limitations in the present procedure, the alternative proposals have failed to gain widespread support and it is unlikely that any changes will be introduced in the near future.

iv) The appropriate treatment of interest on the public debt is a matter of long-standing debate. The present practice is to regard interest payments as transfers rather than final expenditures and factor incomes, thereby excluding them from the aggregate measure of production. In the private sector the opposite is assumed and interest payments are embodied in final expenditures and are regarded as factor incomes.

The different treatment hinges on a perception that government debt is unrelated to productive assets, whereas private sector debt is linked to the acquisition of such assets. Also, national

production and income are unaffected by the choice of treatment in the private sector, with higher or lower interest payments balanced against offsetting changes in the final returns to entrepreneurs. In the case of governments, the overall production aggregates are affected by the choice of method; changes in the method of financing government operations cause output variations.

The argument that government debt was incurred for current rather than capital expenditure was strong when a high proportion of government debt was incurred to finance war expenditures. It was also reasonable to argue that national income should not vary due solely to the manner in which government financed its activity, particularly during periods when substantial shifts in government financing were occurring. This parallels the invariance argument advanced in support of the owner-occupied dwelling imputation. However, these positions have now been challenged.

The existing treatment is criticised on the grounds that nowadays much government debt finances capital expenditures which provide productive services. It is also argued that in any event the whole practice of trying to forge direct links between factor payments and the rendering of a productive service is unrealistic. The pay of workers idling on the job, or inventors receiving royalties for inventions deliberately held off the market, although included in the accounts, are clearly unproductive in any commonly accepted sense of the word. The importance of the invariance argument has also been diminished by the fact that, at present levels of both taxes and public debt, sweeping changes in government financing techniques seem remote.

The arguments continue, but so far there is little evidence to suggest any impending changes in existing practices. With the development of balance sheet data, realistic estimates of the value of services rendered by certain government assets become possible and could be embodied in the production aggregates. However, development work along these lines has yet to be done.

In the Canadian accounts, an important difference occurs in the treatment of government interest payments to domestic sectors and to non-residents. Payments to domestic sectors are regarded as transfers but payments abroad are treated as factor costs. The treatment was the result of the limitations of the original configuration of the accounts and a view that interest payments to non-residents differed from payments to residents inasmuch as they represented a non-resident claim on Canadian production. The effect of the present practice is to lower national aggregates below the level that they would be if the treatment of interest payments to non-residents and residents were consistent.

Perennial issues unrelated to production boundaries

This section focusses on other troublesome and longstanding national accounting issues at the forefront of discussions concerned with improving the accounts. Continuing problems are the heterogeneity of units included in the personal sector, the conceptual and statistical reconciliation of enterprise and establishment based data embodied in the accounts, and the search for a better method of estimating real income and the effects of the terms of trade. Although not the only concerns outside the production boundary issue, they are probably three of the most important that have remained problematic.

i) The Personal and Unincorporated Business Sector

The mix of units within this sector, sometimes called the household or personal sector, makes it one of the more difficult areas to analyse. At present, in addition to the traditional household, it includes transactions relating to unincorporated business, private non-commercial institutions serving persons, and private pension plans and life insurance insofar as changes in their funds are attributable to the saving of households.

In part, this mix is the result of statistical difficulties, such as the impossibility of dividing the net income of a self-employed businessman between that due to him in his capacity as a worker and as an entrepreneur. In part it is due to the lack of a more appropriate sector for units that together are insufficiently important to warrant a sector classification of their own, including such private non-profit institutions serving persons as labour unions, churches, and charitable organizations; their transactions are considered to be those of associations of individuals. Finally it results from the selection of a particular conceptual approach, as in the case of private pension plans, where the funds are considered to be the collective property of households.

The above factors make the structure of the sector complicated and the statistics difficult to interpret. For example, the sector boundary for the production account differs from that of the income and outlay account; theoretically the personal sector production account excludes unincorporated businesses, but the income and outlay and capital finance accounts include them to the extent that they cover net income, depreciation, retained earnings and capital formation.

Analysis is further complicated because of national accounting conventions; for example, personal saving includes contractual saving such as the investment income of private pension and life insurance schemes which may have little impact on personal behaviour and over which

persons have little control. In addition, income and expenditure flows generated by the sector include private non-commercial institutions which makes them less than ideal for use with household statistics.

The provision of sub-sectors for non-profit institutions, and the reassignment of large unincorporated businesses and pension funds and life insurance to the corporate and government business enterprise sector are two of the suggestions made to help overcome the problems.

Because of the mix of behaviour patterns embodied in the personal sector and the growing interest in linking micro and macro-series it has also been proposed that the sector should be purified so that it can be more readily matched with household survey data. For behavioural analysis it has also been suggested that households themselves should be sub-sectored along the lines of working households, non-working households, farm households, etc.

Proposals for changing the personal sector have spanned a wide spectrum, varying from the practical to the idealistic, but to date the sector remains little changed from its original form.

Although dealt with later, trusteed pension plans are mentioned here because of their increasing importance to the sector. Their present treatment and the extent to which government unfunded schemes are handled differently have figured prominently in recent discussions about the sector. The selected treatment has a profound effect on the sector's income, outlay, saving and financial transactions. At present, contributions into and receipts from private pension schemes are not visible as household expenditure and income flows; rather, the bulk of contributions are assigned directly into personal saving, and payments of pensions from these funds are reflected as reductions in the sector's saving. The visible elements in the sector are the operating income and outlays of the schemes themselves, including their investment income.

In unfunded government pension schemes, household contributions to and receipts from the plans are recorded as outlays and income flows of the household. Any excess of payments or receipts is reflected in the government sector saving. The different treatment rests on a distinction between funded and unfunded schemes. For analytical purposes, it can be argued that the treatment accorded to the government sector is to be preferred as it reflects actual cash flows of households incomes and outlays and that pension reserves are non-marketable wealth so far as individual contributors are concerned, regardless of whether they are funded or not. At the very least some further identification and breakdown of pension funds would provide users with optional treatments. Other issues related to the treatment of pension funds are discussed in a later section.

ii) Establishment/Enterprise Problem

The reconciliation of data collected from establishments and enterprises still remains an important statistical issue in the context of the accounts. Generally recognized as the establishment/enterprise problem, it stems from the fact that the reporting unit for industry data is the establishment, or the smallest unit capable of reporting the full range of data from which to compile production accounts, while the enterprise, which tends to be a much larger organizational unit, is the unit capable of reporting data required for financial accounts.

In compiling estimates of domestic production by industry or type of activity, some data come from establishments, such as wages and salaries, while data such as profits are available only from enterprises. In its simplest terms, the statistical problem that this poses is that the classification boundary for an industry contains different non-matching data; the wage and salary data for industry 'A' based on establishment data will not be compatible with profits for industry 'A' based on enterprise data. Depending on their primary activity, establishments which on a combined basis make up an enterprise classified to industry 'A', are likely to belong to other industries on an individual basis. This incompatibility may seriously impair such analytical comparisons as industry payroll to profit ratios.

Theoretically it should not be difficult to match enterprise and establishment data, each enterprise comprising a discrete number of establishments. In practice attempts to achieve this goal have proved to be a most challenging statistical exercise, both in terms of accurate profiling of reporting units and the consistency of reported data. With improving business registers, computer techniques and survey designs some progress might be anticipated in data collection and compilation.

Conceptually, the problem of splitting certain aggregates reported by enterprises among constituent establishments still remains. Are total enterprise profits assignable to individual establishments, or is part of the enterprise profit due only to the fact that the enterprise operates as a single entity? Can all overhead expenses be reasonably allocated to establishments in the firm?

Although the terminology seems to be changing so that the problem is now stated in terms of institutional units and homogeneous production units and independent measures based on these units are referred to as dual sectoring, the fundamental issues are the same - how to reconcile and integrate data from different

reporting units. The solution to the problem may rest in the adjustment of the boundaries of reporting units so that they more readily yield data capable of being fitted into newly developed statistical units designed for publication purposes and compatible over different ranges of data. Estimates of uncollectible data would be imputed for statistical units on the basis of the records of similar units for which data were available.

Statistics Canada has launched an ambitious attack on several fronts that is designed to improve business registers, survey designs and the compilation of compatible data across different levels of business organization. A statistical unit serves as the focal point for data compilation rather than a legal or production unit.

iii) Real Income Measurement

Although the Canadian accounts contain no real income estimates, sharp price movements in internationally traded commodities in recent years have rekindled interest in adjusting the accounts for the real income effects of changes in the terms of trade. Underlying this interest is the proposition that with no change in real domestic production, a country is able to enjoy a substantially higher standard of living if the prices of its exports rise more sharply than those of its imports. In other words, for the same effort, the quantities of foreign goods purchased can be increased. The question is how best to measure net disposable income in real terms.

In the past it has not been usual to attempt to derive real income estimates mainly because of the statisticians' inability to select deflators that would reflect how income is to be spent; such a selection would require clairvoyant powers. There is no single 'correct' measure of real income because price indices cannot be matched in any precise way with the spending associated with income; the results are at best arbitrary. In general, constant price estimates have been restricted to final expenditure and industry real output where commodities can be appropriately paired with price indices.

Real income estimates are prepared in some countries however, using domestic expenditures in constant prices as the starting point. This technique requires only the selection of price deflators for net foreign trade, net investment income from abroad and net transfers from abroad. The logic behind the approach is that the addition of the foreign trade balance in real terms to domestic expenditure at constant prices yields gross domestic income in real terms; the deduction of capital consumption allowances in constant prices and the addition of net investment income from abroad in real terms yields net national income in real terms; finally an adjustment for net foreign transfer payments results in the aggregate measure of net disposable national income in real terms.

The inevitable problem is what price deflators to use for the net foreign flows. Three have been suggested and have been used at different times. An import price index is sometimes used to deflate the net foreign investment flows on the grounds that it results in a measure of the import purchasing power. An average of import and export price indices has also been used, as has the implicit price deflator for total domestic expenditure. In the case of the latter it is reasoned that it measures net foreign investment in terms of foregone domestic expenditure when the balance is positive and in terms of actual domestic expenditure when negative.

Use of the suggested deflators results in three different measures of real income, all of which may be defended and none of which can be said to be uniquely right. Real income measurement remains one of the basic unresolved issues of national accounting.

Possible extensions and modifications to the system

Periodically the system needs fine-tuning to get the best out of it. Sometimes important questions are raised which cannot be answered by reference to the existing structure of the accounts and it is evident that a rearrangement of data, reconsideration of a concept, or recompilation of data in new supplementary tables would increase the usefulness of the system. This section contains examples of four such possible modifications. They are issues complicated by a lack of agreement as to how best they might be handled in the system.

a) Capital gains and losses

The relationship of capital gains and losses to the national accounts has been keenly debated over the years. The issue has perhaps taken on greater significance recently due to the advent of balance sheet estimates coupled with the high rates of inflation experienced in the early eighties. Balance sheet accounts in current values and rising prices both tend to heighten the awareness of, and focus attention on, realized and unrealized capital gains.

The general consensus is that in the context of the production system no place exists for capital gains and losses as they do not reflect output, nor are they transfer payments. In fact great pains are taken to remove capital gains from the production accounts by means of the inventory valuation adjustment. This position stems from a specific-purpose perception of the accounts and the emphasis placed on the accounts as simply a measure of the current value of production.

However, the important role played by capital gains and losses in consumers' and producers' behaviour patterns and their impact on changes in output is unchallengeable. Given the growing importance of finance, some modification of the accounts is now recognized as desirable, not so that output measures would be affected, but in order that users may see the relative impact of realized capital gains and losses on such variables as income and expenditure.

A fully integrated system of accounts contains a reconciliation statement showing the causes of differences between financial flows and corresponding changes derived from opening and closing balance sheets over the same period. One of the principal items in such a statement is due to capital gains and losses. The amounts involved become particularly important when sharp price increases trigger valuation changes in the stock of non-financial assets such as housing, and financial assets such as shares. The question that arises is whether these estimates should appear in any other place in the accounts.

It is important to distinguish between realized and unrealized capital gains and losses. In some sense the realized gains are similar to other forms of income and it can be argued the accounts would be analytically more useful if they were recorded, not in the sector production accounts but in the income and outlay accounts as income equivalent. Such a treatment would destroy the symmetry of the accounts as there would be no counterpart entry in any other sector account but this may not be critical. The broader concept of income would however be more valuable in explaining changes in output, consumption and saving patterns and in linking income and taxes.

Unrealized capital gains and losses should probably remain as supplementary information, useful in explaining changes in the distribution of wealth, but without a formal place in the production or financial flow sets of accounts. Even in the case of unrealized gains and losses, it could be argued that they represent part of a broader concept of saving and should have a place in an extended version of the sector income and outlay accounts.

b) Consumer durables

With the recent publication of national balance sheets in Canada and the decision to include an estimate of consumer durable goods as part of the country's wealth, the question of the most useful treatment of consumer durable goods throughout the rest of the system has been brought into sharp focus. In Canada and internationally, perhaps for reasons more practical than theoretical, it has not been the practice to treat these items as capital goods in the flow components of the accounts. Assuming the same treatment as other categories of capital, the acceptance of consumer durables as fixed assets throughout the system would have major implications for the measurement of production, consumption, capital formation and personal saving.

Many consumer durable items readily fit the traditional capital definition of a tangible fixed asset with a useful service life in excess of one year. However, they are not distinguishable in an accounting sense as are business capital expenditures, although in many respects they are very similar. For example, they are seldom financed from current revenues but rather from saving or borrowed funds; in calculating the net worth of individuals for purposes of making loans, lending institutions frequently recognize certain consumer durables as assets of the individual; when household appliances are an integral part of a new home they are treated as capital items.

The cost of capital used up by business is included in the price of its products and is recorded in its books as depreciation costs. These allowances raise the level of output in the national accounts. The question in the case of consumer durables is whether there is a parallel type of service and if so, whether an imputed service and depreciation allowance should be recorded in the accounts. A decision to include consumer durables as capital has normally foundered on this point. To include them would initially reduce personal expenditure on current goods and services and raise saving and investment, leaving the aggregate production measures unchanged. Subsequently however, as an imputed value for the service rendered by the good was added into personal spending and depreciation charged, the whole value of the country's output would be raised.

It has been suggested that to embody consumer durables in the system as capital in the traditional manner would be disruptive to the historical continuity of the system of accounts and would add unduly to their complexity. The present Canadian treatment avoids this issue by adopting different concepts in the level and flow accounts and showing a balancing item in the reconciliation statement. No matter what the formal treatment, there is a consensus among national accountants that this is an area where additional data provide valuable analytical background.

c) Non-reproducible natural resources

In the past, non-renewable natural resources have largely been ignored in the accounts; the discovery of natural resources has not been included as capital formation and the depletion of resources has not been recorded as capital consumption. As with capital gains and losses, the preparation of balance sheets and reconciliation statements has forced some reconsideration of the issue. The discovery and subsequent depletion of natural resources can in some sense be thought of as parallelling capital gains and losses.

Two issues are involved with respect to the production accounts, one relating to the discovery of natural resources and the other, the using up of those resources in subsequent periods. There seems little justification for including the value of new natural resource discoveries in the production accounts as capital formation, a proposal that has sometimes been advanced. Yet as resources are used up, some allowance for their depletion would seem appropriate. Such an approach would of course be inconsistent with that accorded to other capital assets.

Failure to allow for the use of non-reproducible resources overstates net output in the sense that it includes capital being depleted and makes no

provision for the eventual replacement of exhausted natural resources through say, the purchase of imports or exploration activity. If the underlying concept of net output is the level of production that can be sustained without selling capital assets and reducing national wealth (assuming no new discoveries) a depletion allowance would clearly be justified.

The United Nations System of National Accounts formally recognizes the value of new resource discoveries only in the balance sheet. The existing framework isolates net new discoveries in the reconciliation statement where differences between investment in financial and non-financial assets and changes in balance sheet levels are explained. It is important however, that the reconciliation item identifies separately extensions and removals from proven reserves if the depletion allowance in the production accounts and the balance sheet data are to be linked.

The present Canadian system does not include an estimate for non-renewable natural resources in the balance sheet accounts. The statistics would be of great value but the problems involved in their estimation are formidable. Because there is virtually no market in mines, the method of valuation of proven mineral resources involves difficult questions of discounting the future net proceeds from the sale of the extracted minerals at current prices, a procedure full of questionable assumptions. Sudden shocks affecting values may be anticipated from factors other than price changes.

The suggestion that the discovery and exploitation of natural resources should play a more prominent role in the accounts and that changes should be reflected in the capital and financial transactions accounts is an important one, especially for those countries living on natural resource capital. However, the full implication of proposed modifications to the accounts needs further discussion before any action is taken, particularly in view of the current state of both the concepts and statistics in this area.

d) Consumption by sectors

There is growing concern that the present system of accounts fails to provide accurate estimates of consumption by sectors. Formerly, the expenditure estimates contained in the income and outlay accounts were regarded as good proxies for consumption; however, with the increasing trend toward the separation of expenditures and consumption they are now less satisfactory. There are many instances of this shift in the relationship of spending to consumption. The most important has been the assumption by governments of responsibility for purchasing health care services to be provided to individuals. The effect of this is likely to have been to reflect a relative decline in recorded spending on this service by persons despite a relative rise in consumption.

The following illustrates the type of problem posed by the expenditure/ consumption dichotomy. Where individuals pay doctors' fees themselves the expenditure is recorded in the personal sector and expenditure and consumption coincide. However, when government provides health care directly, as under many social programmes, expenditure is recorded in the government sector. In both instances individuals have consumed the service and are the obvious beneficiaries, but expenditures have been recorded in different sectors.

The concept of consumption is not always as easy as' in the case of health care and education. For example, government expenditures on police and defence are made for the collective benefit of the entire population but their consumption is not easily attributable to the beneficiaries. A further problem, of lesser importance, is that even if all expenditures could be correctly assigned to the consumer, it would still be necessary to adjust them for changes in stocks held by consumers. In order to arrive at a conceptually pure consumption estimate, an imputation for services provided by consumer durables should be substituted in place of actual outlays.

The proposals for tackling this topic have been directed towards adding supplementary tables to the structure of the accounts rather than modifying the existing tables and aggregates. Progress may be achieved initially by allocating only some part of government expenditure to the ultimate beneficiary. Unfortunately, no clear cut definition of what constitutes individual consumption of government services exists; therefore it has been suggested that rather arbitrarily selected functional categories of government expenditure be used, including, for example, education, health, social security and welfare.

Consumption subsidies paid by government to producers in order to lower prices of specific goods and services to individuals present another dimension of the problem. Even if personal consumption is identical, it will be valued differently if financed by subsidies rather than by government direct market purchases, or through transfer payments to the ultimate beneficiary. A possible solution in this case might be to add the valve of consumption subsidies to other consumption expenditures of individuals. In this way, the value of consumption will remain invariant to the method of financing. The definition of subsidies of direct benefit to individuals would necessarily be somewhat arbitrary. Despite the sometimes rather subtle differences between subsidies and transfers, the national accounting treatment provides that they have quite a different impact on the market valuation of production and consumption.

More recent concerns about the accounts

In recent years social and economic changes have occurred, calling into question the relevance of certain measures and concepts enshrined in the existing

accounts. The changes are in large part manifestations of society's reaction to taxes. The examples explored in this section are the 'underground' economy (market-type production which is unrecorded in the accounts), the explosive growth of pension funds, and the practice of leasing major items of equipment under special financing arrangements.

A further problem that has been of growing concern to national accounts producers and users is an inability to fully mesh the analysis of production and financial developments at a time when financial issues appear to be of increasing importance. It has been suggested that the production and financial worlds are less closely coupled than in former years, as evidenced by massive global capital flows which seem only remotely linked with trade and production and the spate of corporate take-overs and mergers.

Although the present Canadian and international systems contain financial flows and balance sheet levels as part of the overall framework, they are relatively late developers and have not received the same attention as their counterparts in the production field. Unfortunately they lack the same strong theoretical backing. However, clearly a need to understand better the financial processes exists, and this may have to be acquired through induction rather than the perhaps more respectable deductive approach. The above suggests that the statistical frameworks in which financial data are recorded need to be re-examined to ensure that the concepts, the design and the content of the frameworks are all best suited to understanding the financial system in the present economic climate.

a) The 'underground' economy

This issue is one of statistical measurement rather than concept. Allegations of growing amounts of production being unrecorded in the national accounts have given rise to a great many statistical investigations in recent years. The development has been ascribed to a number of factors, of which the principal ones are to evade taxes and avoid criminal prosecution. The desire to hide income that if reported would jeopardise receipt of income support payments and the desire to circumvent government regulations and restrictions are also factors.

A distinction must be made between those activities which, even though conceptually part of production, are by convention largely omitted from the national accounts such as illegal activities, and those which by both concept and convention are part of production but which elude statistical measurement, such as working 'off-the-books'. The so-called 'underground' economy comprises both these elements.

The illegal activities are self-evident and include prostitution, drug trafficking and most forms of gambling. At the core of the unrecorded market-oriented legal transactions are working at a second job where neither wages are reported nor social security taxes paid; renting rooms such as in a small scale bed-and-breakfast operation and not declaring revenues; bartering goods or services where, for example, home improvement work is undertaken in exchange for book-keeping of equivalent value with no money exchanging hands; and skimming income off the top of a business by pocketing some of the cash transactions and not reporting them as income.

The precise extent of the statistical gap created by this type of activity is unknown but on the basis of investigations, it is now suspected to be smaller than originally thought. Because production estimates are constructed from both an income and expenditure aspect, production unreported in the income based estimates will often surface in the expenditure based estimates, where methodology differs and the incentive not to report items is less evident. As gross domestic product is derived as an average of the two measures, the impact of unreported activity is moderated. In addition, indirect checks are applied to the data in order to make adjustments where direct measures appear to be giving false results.

Although the 'underground' economy does not require modification of the structural framework of the accounts it does require that special efforts be made to capture the production to which it gives rise. The problem is essentially methodological rather than conceptual in nature.

b) The treatment of trusteed pension funds

The discussion in this section deals only with funded pension plans. The national accounting treatment of unfunded plans, such as the government sponsored old age pension scheme, is quite different; no assets are recorded in the balance sheets and pension payments are regarded as transfer payments from government to persons in the income and outlay accounts.

Trusteed pension funds have grown dramatically in recent years, reflecting the impact of tax saving incentives offered to those taking advantage of retirement savings plans. In general and within prescribed limits, the plans allow contributors to defer tax payments until retirement on amounts saved. In the Canadian accounts a significant proportion of saving is now attributable to increases in pension reserves linked to these plans.

At present, the Canadian accounts record trusteed pension funds as belonging to persons and the net change in fund reserves as part of personal saving. Pension contributions and receipts are regarded as taking place within the sector and are therefore unrecorded in the income and outlay account of persons and unincorporated business. The only flows associated with the pension plans recorded in the sector account are investment income on the plans' reserve funds and the administrative expenses of the funds. The financial flow accounts and balance sheets record the change and level of pension reserves as a single asset item in the household account; the offsetting liability is reflected in the institution investing the funds.

Some dissatisfaction exists with the present treatment. The argument has been advanced that pension funds are not normally considered as assets by individual beneficiaries, and they have no marketable wealth as is normal with other forms of assets. Further, decisions regarding saving attributable to pension funds are not made by persons and persons have no access to the assets until certain conditions are met in the future.

Pension reserve funds could be recorded as assets of the financial institutions managing the funds and the changes in them as net saving of the institutions. The personal sector would then record actual cash flows associated with receipt of pensions and payment of contributions. However, at present the preferred method in Canada for dealing with the shortcomings of the existing system is to provide supplementary data. Supporting this basically 'no-change' position is the view that where pensions are well protected and guaranteed by legislation, they are in fact similar to some other forms of personal saving and that, therefore, there is no overwhelming case for making a fundamental change.

Employers' contributions to pension funds have also been the subject of some discussion. The present method routes employers' contributions first to persons, as part of the employees' compensation package, and, secondly, from persons to the pension fund. It has been proposed that employers' contributions be routed directly into pension funds. A more fundamental objection is that the labour income estimate which is a major component of personal income would be reduced; the saving element of the contribution would then either have to be shown as a transfer payment from employers to persons or as saving of the employer - neither of which correctly reflects the spirit of the transaction.

c) The evolution of leasing arrangements

It is now common practice to lease commercial buildings and industrial equipment on a scale not previously encountered. Instead of buying buildings and equipment, industrial firms may lease them from a financial or commercial institution. The initial investment is undertaken by the institution and legal ownership of the asset remains with it, although to all intents and purposes it becomes the property of the industrial user. However, national accounting methodology was originally designed to handle leasing associated with relatively small items of equipment, such as automobiles, in which the lessee was clearly buying a service. This treatment is considered inappropriate for the new type of leasing transaction.

Treating the newer forms of leasing on the old basis would result in relatively declining capital formation in industrial concerns and burgeoning fixed investment in financial institutions, growing purchases of intermediate service inputs by industrial firms and declining value added, and reduced lending and lower interest receipts by financial institutions and higher service receipts.

From a production perspective, recorded changes would in a sense be artificial. For example, airlines leasing aircraft from banks act, in all other respects, as owners of the equipment. The arrangement, whereby the legal ownership of the equipment remained with the financing institution, was agreed to in many instances to allow both lessor and lessee to benefit from certain tax provisions relating to depreciation.

The Canadian system has already implemented new internationally recommended proposals that distinguish financial leases from operating leases. In the former, the user, or lessee frequently has some control over the initial investment specifications; has full possession of the good over the lifespan of a non-terminable contract in which repayments cover the full cost of the good plus any financing costs; maintenance and repair costs are borne by the lessee who has the right to purchase the good at the end of the contract; the lessor remains the legal owner of the good during the lifetime of the contract. In operating leases the good is normally leased by several users over its lifetime and the maintenance and repair remains the responsibility of the lessor; both parties to an operating lease regard the transaction as the provision or purchase of a service.

The proposed treatment of financial leasing is to record the associated capital formation in the using industry, and an imputed loan from the lessor to the lessee. Subsequent value added generated by the equipment is attributed to the using industry and lease payments are recorded as part repayment of the imputed loan and part interest payment. The lease is recorded as a financial liability of the lessee in the balance sheet accounts. In essence the leasing arrangement is treated as a borrowing/ lending transaction affecting the financial flows and balance sheets, and the associated capital formation and subsequent service rendered transactions are treated in the production accounts as if the equipment was a straightforward purchase of capital by the using firm.

The future

The discussion of important issues and unresolved problems provided above are thumb-nail sketches at best; the richness of the debate surrounding them has been omitted. However, they do, provide sufficient background to permit some assessment of likely future development. Serious students of national accounting will have no trouble tracing more detailed discussion of the problems in the abundant literature concerning national accounts.

A review of major trouble spots and the proposals for overcoming them suggest that fundamental alterations to the existing framework of the accounts is unlikely in the near future. Changes are more likely to be at the margin. This is because the problems either still defy generally acceptable solutions, or they can be overcome by relatively minor modifications to the existing framework and/or the addition of supplementary tables. If this is

correct, then in what direction is national accounting likely to develop?

The developers of national accounts have explored the possibility of linking and integrating social and demographic accounts with the existing economic accounts. So far these attempts have not met with great success. Abstract models of social conditions associated with the demographic base of the country have been too far in advance of their statistical base, and when simplified to take account of data availability, their explanatory powers have been seriously compromised. On a theoretical plane, the relationship of the existing system of accounts to the general environmental and natural resource endowments of a nation has been discussed but no formal integrated statistical framework has been developed and generally accepted.

More practical attempts to create a new dimension for the accounts include extensions into the realm of social statistics through the introduction of sub-divided economic accounts based on such factors as age, education, geographic distribution, and ethnic origin. At present, this cross-pollination of the social and economic fields has taken place primarily in independent ad hoc research projects rather than within a systematic extension of the accounts framework.

Work has also proceeded in the direction of developing comprehensive sets of integrated economic and social data related to a major area of interest in the economy. These satellite accounts are intended to throw light on areas such as health, education, research and tourism, are not mutually exclusive and do not form part of a single cohesive framework for the nation. They are non-additive self-sustaining sets of functional national accounts embracing the full range of products, suppliers, payers and beneficiaries of say, the educational services of the country. The satellite accounts are, however, integrated with the system of national accounts to the extent that common components share the same concepts, classifications and definitions, a valuable attribute when analysing them in the context of the overall economy.

Changes to the present accounts have also been proposed in order to better accommodate and integrate the vast range of microdata now available. Modified sets of accounts have been produced by independent researchers to illustrate how the microdata might be introduced and integrated into the existing macro-based national accounts. It has been argued that this integration not only dramatically extends the analytical power of the accounts by the inclusion of completely new sets of data, but that it reduces the risk of analytical studies arriving at different conclusions simply because of the choice of incompatible data bases. Work in the area of meshing micro- and macrodata sets, while promising, is still very much at the exploratory stage.

Predictions concerning the future of the System of National Accounts cannot be precise, but on the basis of papers, critiques, comments by users and meetings of experts it appears unlikely that basic changes in the framework are in the offing. The direction seems more likely to be towards refinement of classifications of transactions and transactors, the addition of supplementary tables to meet analytical needs and greater disaggregation of economic accounts according to the social and demographic characteristics of the population.

Although specific developments remain hazy, one general observation regarding the future of the accounts is clear. It is that national accountants must be alert and react to significant underlying economic changes occurring in the nation. New issues arise due to the dynamic nature of the economy, and if the accounts cease to be responsive and/or are perceived to be non-relevant, they will lose their preeminent position among analytical tools. Canadian national accounts practitioners recognize that this places a considerable burden on them to introduce imaginative modifications and new designs into the framework when needed, and to guard against the tendency to shelter too long behind the 'value of statistical continuity' argument.

Appendix

Current Publications in the Canadian System of National Accounts

Catalogue No.	Publication
13-001	National Income and Expenditure Accounts. Quarterly Bilingual. First data-year available 1947.
13-002	Financial Flow Accounts. Quarterly Bilingual. First data-year available 1962.
13-002P	Financial Flow Accounts: Preliminary data. Quarterly Bilingual.
13-201	National Income and Expenditure Accounts. Annual Bilingual. First data-year available 1926.
13-213	Provincial Economic Accounts. Annual Bilingual. First data-year available 1926.
13-213P	Provincial Economic Accounts: Preliminary Estimates. Annual Bilingual.
13-213S	Provincial Economic Accounts. Historical Issue, 1961-1986. Annual Bilingual
13-214	Financial Flow and National Balance Sheet Accounts. First data-year available 1961 for national balance sheets.
15-001	Gross Domestic product by Industry. Monthly Bilingual. First data-year available 1961
15-201	The Input-Output Structure of the Canadian Economy. Annual Bilingual. First data-year available 1961.
15-202	The Input-Output Structure of the Canadian Economy in Constant Prices. Annual Bilingual. First data-year available 1961.
15-203	Provincial Gross Domestic Product by Industry. Annual Bilingual. First data-year available 1971.
15-204	Aggregate Productivity Measures. Annual Bilingual. First data-year available 1946.
67-001	Canadian Balance of International Payments. Quarterly Bilingual. First data-year available 1946 (Fourth quarter editions contain annual data)
67-001P	Canadian Balance of International Payments. Preliminary data. Quarterly Bilingual.
67-202	Canada's International Investment Position. Annual Bilingual. First data-year available 1926.
67-202P	Canada's International Investment Position. Preliminary data. Annual Bilingual.
67-203	Canada's International Trade in Services. Annual Bilingual. First data-year available 1969.

Occasional Reports

13-531	National Income and Expenditure Accounts, Annual Estimates, 1926-1986. Bilingual.
13-533	National Income and Expenditure Accounts, Quarterly Estimates, 1947-1986. Bilingual.
13-549	National Income and Expenditure Accounts, Volume 3. A Guide to the National Income and Expenditure Accounts Definitions, Concepts, Sources and Methods. English and French.
13-585	A Guide to the Financial Flow and National Balance Sheet Accounts. Definitions, Concepts, Sources and Methods. English and French.
15-510	The Input-Output Structure of the Canadian Economy, 1961-1981. Bilingual.
15-511	The Input-Output Structure of the Canadian Economy in Constant Prices, 1961-1981. Bilingual.
67-506	The Canadian Balance of Payments and International Investment. A description of Sources and Methods. English and French.

Current releases frequently contain references to earlier publications in the Canadian System of National Accounts series. Most of these earlier reports are now out of print but may be consulted in the Statistics Canada Library or in many university and research institute libraries.

Series pre-dating the official Statistics Canada time series are in some instances available as the result of independent studies and interested research workers should enquire about this possibility.

Index

A

Accounting
- links between business and economic accounts, 32, 55, 61

Asset and liability classification in financial flows, 56

Assets,
- defined, 61
- valuation, 62

B

Balance of payments
- analytical balances, 73
- as part of system of national accounts, 71
- availability, 71
- balance between current and capital account, 73
- business services, 76
- capital account contents and definitions, 72, 77
- concepts, 71
- constant price estimates, 80
- contents and definitions, 73
- country detail, 80
- credit and debit entries, 72
- current account, 71
- current account balance, 77
- different role in system, 81
- direct investment, 78
- distinction between transactions and payments, 72
- double entry system, 72
- exports and imports of merchandise, 75
- extending statistical analysis, 73
- foreign exchange transactions, 80
- framework, 71
- freight and shipping, 75
- government transactions, 76
- inflows and outflows of money, 72
- investment income, 76
- links to other parts of system, 81-83
- net basis for most capital flows, 78
- official international reserves, 79
- other capital movements, 79
- other services, 76
- overview, 10
- portfolio investment, 78
- residency, 71
- retained earnings, 72, 76
- seasonal adjustment, 80
- Special Drawing Rights, 79
- statistical discrepancy, 80
- supplementary tables, 80
- transaction values, 71
- transfers, 77
- travel, 75
- unit of account, 71
- unit of classification, 71
- uses, 81
- withholding taxes, 76

Balance sheets
- assets, 61
- availability, 59
- changes not attributable to financial flows, 67
- combined rather than consolidated, 65
- consumer durable goods, 63, 66
- coverage, 59
- current, market or book values, 62
- depletable stocks, 64
- exclusions, 62
- extending statistical analysis of economy, 60
- financial claims, 64, 67
- framework, 60
- inventories, 63, 66
- land, 66
- liabilities, 62
- life insurance and pensions, 67
- link between economic and business accounting, 61
- links between balance sheets and international investment, 68 national wealth, 60
- net worth, 60
- net worth variations, 62
- non-financial assets, 66
- non-residential capital, 66
- overview, 9
- reconciliation statement, 67
- renewable resources, 64
- residential capital, 66
- sectors, 65
- uses, 68
- valuation, 62

Banks
- output valuation, 91
- production, 27

Banks and near-banks defined, 56

Business sector
- defined, 38
- non-financial, financial split, 55

C

Canadian system of national accounts
- importance of consistency of concepts, 14
- interrelationship of components, 14
- principal components, 9

Capital account of the balance of payments, 77

Capital consumption allowances, 41

Capital gains and losses, 53, 94

Consolidation and combination in financial flows, 54

Constant price estimates
- balance of payments, 80
- income and expenditure accounts, 44
- input-output aggregates, 24
- input-output and income expenditure link, 30

Consumer durables, 63, 95

Consumption versus expenditure, 96

Contingent liabilities, 67

Controversial issues
- establishment/enterprise problem, 93
- final or intermediate output, 90

imputations, 89
interest on the public debt, 91
personal sector inclusions, 92
production boundaries, 89
real income measurement, 94
valuation of bank output, 91
Corporate business and government enterprise sector, 38
Corporation profits
adjustments to business accounting profits, 40
defined, 40
Credit market
activity, 57
instruments, 57
Credit unions and caisses populaires, 56
Current account of balance of payments, 73

D
Depletable stocks, 64
Depletion allowances, 40
Discrepancy item, 33
Dividends, 40
Double deflation, 24
Dummy or synthetic industries, 27

E
Establishment/enterprise problem, 93
Exchange rates, 72
Exports and imports of goods and services, 43

F
Factor cost valuation, 12
Factor incomes, 23
Final domestic demand, 36
Final or intermediate product, 90
Financial claims valuation, 64
Financial flows
availability, 49
balancing the system, 53
capital gains and losses, 53
classification of financial instruments, 51, 56
consolidation and combination, 50, 54
constraints in the system, 53
discrepancy item, 57
economic and business accounting, 55
exchange rate changes, 54
extended sector detail, 50
extending statistical analysis of economy, 50
four entry system, 53
framework, 49, 51
life insurance and pensions, 57
links with balance of payments, 83
links with balance sheets, 58
netting of assets and liabilities, 50
overview, 9
sectors, 55
supplementary tables, 57
timing problems, 53
transaction categories, 51
transaction motivations, 49
transactions in assets and liabilities, 49
uses, 57
valuation of financial instruments, 53
Financial instruments defined, 56
Financial sectors detail, 55
Fixed capital, 42
Foreign exchange transactions, 80
Future direction of the accounts, 98

G
Government
current expenditure, 42
investment income, 40
sector defined, 37
supplementary information in income and expenditure accounts, 46
Gross domestic product
defined, 18
final expenditure approach, 22
income approach, 23
value added approach, 23
Gross national product, 36

I
Illegal activities, 11
Imputations, 11, 89
Income and expenditure accounts
availability, 31
business sector, 38
capital finance accounts, 32
constant price estimates, 44
discrepancy item, 33
economic and business accounting, 32
extending statistical analysis, 31
final domestic demand, 36
government sector, 37
Gross National Product, 36
industry estimates, 45
links with balance of payments, 82
links with financial flows, 47
links with input output, 29
national and domestic income, 33
non-resident sector, 39
overview, 9
personal disposable income, 36
personal income, 36
personal sector, 36
production accounts, 31
provincial estimates, 45
seasonal adjustment, 46
sector income and outlay, 32
supplementary tables, 32
transaction categories, 39
transfers, 32
uses, 46
Income of farm operators, 41
Income of unincorporated business, 41
Indirect taxes and subsidies, 41
Input output tables
availability, 17
balancing the system, 28
commodity classification, 27
constant prices, 24
deflation of trade margins and indirect taxes, 25
discrepancy item, 33
dummy industries, 27

final demand, 22
framework, 17
industry classification, 27
industry intermediate inputs, 18
links with balance of payments, 82
links with income expenditure accounts, 29
mining and refining classification, 28
overview, 9
own-account construction, 28
real estate classification, 28
tax margins, 28
uses, 28
unit of classification, 26
Interest and miscellaneous investment income, 40
Interest on consumer debt, 40
Interest on the public debt, 40, 91
Intermediation, 57
International investment position
availability, 83
classifications, 84
concepts, 84
direct investment, 84, 87
extending the statistical analysis, 84
foreign currency conversion, 86
framework, 84
industrial classification, 87
links with balance of payments, 88
links with other parts of system, 88
net worth, 86
other investment, longer term, 85
other investment, short term, 86
overview, 10
portfolio investment, 85
statistical discrepancy, 88
supplementary tables, 87
uses, 87
valuations, 86
Inventories
value of physical change, 43
valuation adjustment, 41

L
Land, 64
Leasing treatment, 98
Lending or borrowing, 51
Liabilities,
defined, 62,
valuation, 62
Life insurance and -pensions, 56, 57, 67
Links,
balance of payments and other parts of system, 81
balance sheets and international investment, 68
financial flows and balance sheets, 58
income and expenditure accounts and financial flows, 46
input output and income and expenditure, 29
international investment and balance of payments, 88

M
Market price valuation, 12
Military pay and allowances, 39
Modifications to system of accounts accounting
for natural resources, 95
capital gains and losses, 94
consumer durables, 95
consumption by sector, 96
leasing, 98
private pension funds, 97
underground economy, 97
Monetary authorities, 55

N
National and domestic defined, 11
National and domestic income defined, 33
National wealth defined, 60
Net worth defined, 60-61
Non-financial assets, 66
Non-reproducible natural resources, 95
Non-resident sector, 39

O
Official international reserves
composition, 79
Other private financial institutions, 56

P
Personal disposable income, 36
Personal expenditure, 42
Personal income, 36
Personal sector
defined, 36
refinement of sector boundary, 92
Private pension funds treatment, 97
Producers' prices, 26
Production
boundary, 10, 89
gross and net, 11
Productivity measures, 25
Provincial estimates of income and expenditure accounts, 45
Public financial institutions, 56
Purchasers' prices, 26

R
Real domestic production
industry of origin, 25
Real income measurement, 94
Renewable resources, 64
Rental income, 41
Reproducible fixed assets
perpetual inventory estimation procedure, 63
valuation, 63
Residents of Canada, determining factors, 71, 79
Retained earnings in balance of payments, 72,

S
Seasonal adjustment
  income and expenditure, 46
Sector accounts,
  balance sheets, 65
  business, 38
  financial flows, 50, 55
  capital finance accounts, 32
  government, 37
  income and outlay, 32
  non-resident, 39
  personal, 36
  production accounts, 31
Special Drawing Rights, 55, 85
Subsidies, 41
Supplementary labour income, 39

T
Transaction categories in,
  financial flows, 51
  income and expenditure accounts, 39
Transfers. 32
Trust companies, 56

U
Underground economy, 11, 97

W
Wages
  salaries and supplementary labour income, defined, 39